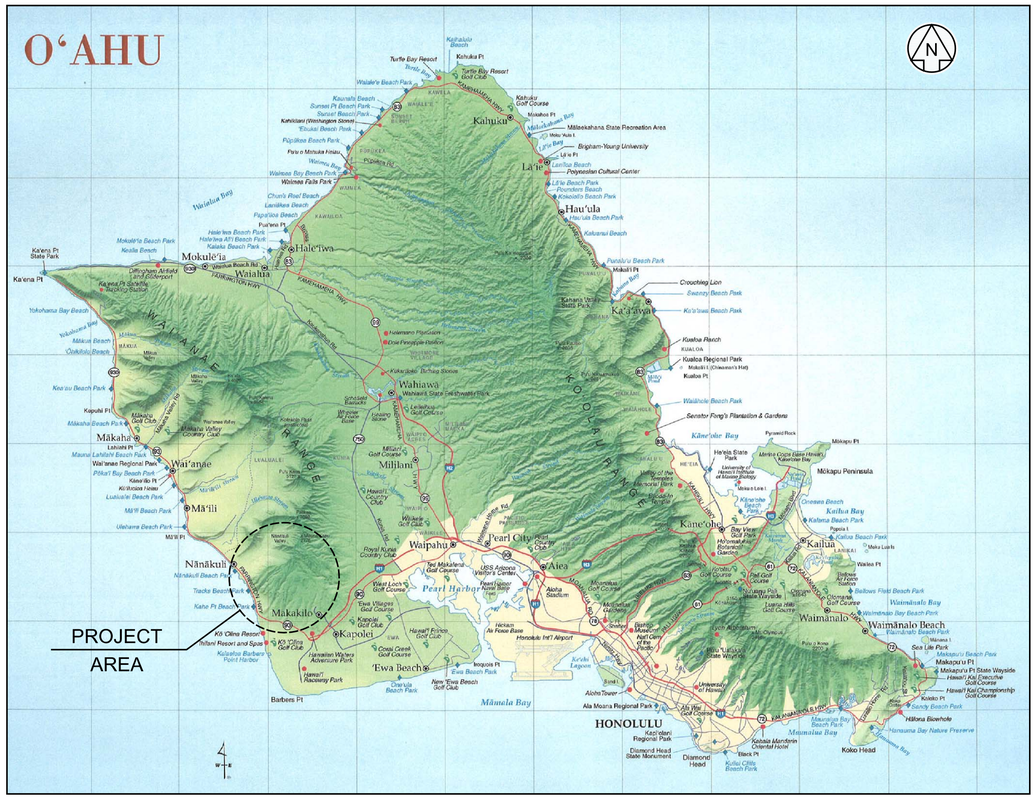
WAIMANALO GULCH LANDFILL

WESTERN SURFACE WATER DRAINAGE PROJECT
EWA BEACH, OAHU, HAWAII

PROJECT NO. 07018-1

APRIL 2010



VICINITY / PROJECT AREA MAP

LIST OF DRAWINGS	
DWG NO.	TITLE
C-00	VICINITY / PROJECT AREA MAP AND LIST OF DRAWINGS
C-01	PROJECT NOTES
C-02	PLAN AND PROFILE OF MODIFICATIONS
C-03	PLAN AND PROFILE PERMANENT DRAINAGE STA. 0+00 TO STA. 12+00
C-04	PLAN AND PROFILE PERMANENT DRAINAGE STA. 12+00 TO STA. 27+00
C-05	PLAN AND PROFILE PERMANENT DRAINAGE STA. 27+00 TO STA. 42+00
C-06	PLAN AND PROFILE PERMANENT DRAINAGE STA. 42+00 TO STA. 57+00
C-07	PLAN AND PROFILE PERMANENT DRAINAGE STA. 57+00 TO STA. 67+00
C-08	DIVERSION STRUCTURE PLAN AND SECTIONS
C-09	TRANSITION STRUCTURE PLAN AND SECTIONS
C-10	TRANSITION STRUCTURE PLAN AND SECTIONS STA. 52+44
C-11	TYPICAL SECTIONS (SHEET 1 OF 2)
C-12	TYPICAL SECTIONS (SHEET 2 OF 2)
C-13	MISCELLANEOUS DETAILS (SHEET 1 OF 2)
C-14	MISCELLANEOUS DETAILS (SHEET 2 OF 2) AND CONSTRUCTION NOTES
C-15	TRASHRACK PLAN, SECTIONS, AND DETAILS
C-16	PLAN AND PROFILE TEMPORARY DRAINAGE STA. 0+00 TO STA. 15+00 (REV. 1)
C-17	PLAN AND PROFILE TEMPORARY DRAINAGE STA. 15+00 TO STA. 30+00
C-18	PLAN AND PROFILE TEMPORARY DRAINAGE STA. 30+00 TO STA. 45+00
C-19	PLAN AND DETAILS SURFACE DRAINAGE OF EXCAVATION BENCHES
C-20	84-INCH AND 36-INCH HDPE DETAILS IN CONCRETE LINED CHANNEL (REV. 1)
C-21	DOWNSTREAM STILLING FACILITIES PLAN AND SECTIONS
C-22	FLIP BUCKET STRUCTURE PLAN AND SECTIONS
C-23	TEMPORARY DRAINAGE DIVERSION BERM AND INLET INSTALLATION (REV. 1)
C-24	INLET ABANDONMENT (ISSUED 04/12/10)

PROJECT MANAGER

DIRECTOR OF ENGINEERING

WASTE MANAGEMENT

Oakland • California GEI Consultants

WILLIAM A. RETTBERG LICENSED PROFESSIONAL ENGINEER No. 12473-C HAWAII, U.S.A.

DATE: 04-12-10

REV.	DESCRIPTION	BY	APP.	DATE
1	ISSUED FOR CONSTRUCTION			04-12-10
0	ISSUED FOR CONSTRUCTION			01-13-10

DESIGNED BY:	A. TLABAR
CHECKED BY:	C. ANDERSON
DRAWN BY:	P. MORRISON
CAD FILE NAME:	C-00
PROJECT NO. 07018-1	SCALE: AS SHOWN

WAIMANALO GULCH LANDFILL
WESTERN SURFACE WATER DRAINAGE PROJECT
EWA BEACH, OAHU, HAWAII

VICINITY / PROJECT AREA MAP AND LIST OF DRAWINGS

DATE: 04-12-10

DRAWING NO. C-00

C-00 04/12/10 PYM

ABBREVIATIONS

AASHTO = AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS
ACI = AMERICAN CONCRETE INSTITUTE
ASTM = AMERICAN SOCIETY FOR TESTING AND MATERIALS
AWS = AMERICAN WELDING SOCIETY
BVCE = BEGIN VERTICAL CURVE ELEVATION
BVCS = BEGIN VERTICAL CURVE STATION
CJ = CONSTRUCTION JOINT
CL, C = CENTERLINE
CLR_L = CLEAR
CLSM = CONTROLLED LOW STRENGTH MATERIAL
CNTR = CENTER
DIA, Ø = DIAMETER
DIAG = DIAGONAL
DWG, DWGS = DRAWING OR DRAWINGS
EA = EACH
EF = EACH FACE
EL., ELEV = ELEVATION
EVCE = END VERTICAL CURVE ELEVATION
EVCS = END VERTICAL CURVE STATION
EW = EACH WAY
FT = FOOT OR FEET
GALV = GALVANIZED
H = HORIZONTAL
HDPE = HIGH DENSITY POLYETHYLENE
HORIZ = HORIZONTAL
HPI = HORIZONTAL POINT OF INTERSECTION
ID = INSIDE DIAMETER
INV = INVERT
KSI = KIPS PER SQUARE INCH
MAX = MAXIMUM
MIN = MINIMUM
NA = NORTH ARROW
NC = NORTH CHANNEL
NO = NUMBER
NTS = NOT TO SCALE
O.N = ON CENTER
OPNG = OPENING
PC = POINT OF CURVATURE
PD = PLAIN DOWELS
PSI = POUNDS PER SQUARE INCH
PT = POINT OF TANGENCY
PVC = POLYVINYL CHLORIDE
PVI = POINT OF VERTICAL INTERSECTION
PL = PLATE
RCP = REINFORCED CONCRETE PIPE
REINF = REINFORCEMENT
SN = STIFFNESS NUMBER
STA = STATION
T&B = TOP AND BOTTOM
TYP = TYPICAL
V,VERT = VERTICAL
VC = VERTICAL CURVE
VPI = VERTICAL POINT OF INTERSECTION

GENERAL NOTES

1. DISTANCES SHOWN IN PROFILES ARE FROM PVI. SLOPES ARE CALCULATED USING HORIZONTAL AND VERTICAL ELEVATION DIFFERENCE BETWEEN THE POINTS WHERE THE INVERT ELEVATIONS ARE GIVEN.
2. PIPELINE STATIONING AND HORIZONTAL DIMENSIONS SHOWN ON THESE PLANS IS HORIZONTAL DISTANCE MEASURED ON A LEVEL-PLANE. ACTUAL PIPE LENGTH SHALL BE DETERMINED BY MEASUREMENT ALONG THE SLOPE OR CURVE ALONG WHICH THE PIPE IS INSTALLED.
3. HORIZONTAL AND VERTICAL POINTS OF INTERSECTION SHOWN IN PLAN AND PROFILE ARE NOT WARRANTED TO BE EXACT. THE FINAL LOCATIONS OF HORIZONTAL AND VERTICAL POINTS OF INTERSECTION, FITTINGS, AND APPURTENANCES WILL BE DETERMINED BY THE CONTRACTOR IN THE FIELD AND INCLUDED IN THE AS-BUILT RECORD DRAWINGS.
4. BASIS OF PROJECT MAPPING: TOPOGRAPHIC MAPPING FOR THIS PROJECT WAS PROVIDED BY AERO-METRIC, SEATTLE, WASHINGTON. SURVEY WAS FLOWN ON MARCH 16, 2009.
5. BASIS OF COORDINATE SYSTEM AND ELEVATIONS: THE LOCAL COORDINATE SYSTEM IS A MODIFIED PROJECT SYSTEM PROVIDED BY OWNER.
6. THE CONTRACTORS SHALL LIMIT THEIR ACTIVITY ALONG THE ALIGNMENTS TO WITHIN THE PROPERTY LINE UNLESS SHOWN OTHER WISE AND SHALL RESTORE ALL DAMAGED AREAS TO CONDITIONS EQUAL TO OR BETTER THAN PRIOR TO CONSTRUCTION.
7. PROPERTY LINE INDICATED ON THE DRAWINGS WAS PROVIDED BY WASTE MANAGEMENT. CONTRACTOR SHALL VERIFY FIELD STAKED LIMITS OF WORK WITH OWNER TO VERIFY PROPERTY LINES WILL NOT BE ENCROACHED.
8. CONTRACTOR SHALL PROTECT OR RESTORE ALL SURFACE AND SUBSURFACE UTILITIES, (E.G. GAS WELLS, GAS PROBES, FENCES, MONITORING WELLS, ETC.) AND OTHER FACILITIES ENCOUNTERED DURING CONSTRUCTION WHETHER SHOWN ON THE DRAWINGS, OR NOT.
9. THE LOCATION AND ELEVATIONS OF UNDERGROUND OR EXPOSED EXISTING STRUCTURES AND UTILITIES ARE NOT WARRANTED TO BE EXACT NOR IS IT WARRANTED THAT ALL UNDERGROUND OR EXPOSED STRUCTURES AND UTILITIES ARE SHOWN. ALL UNDERGROUND OR EXPOSED STRUCTURES OR UTILITIES INFORMATION SHALL BE RECORDED BY THE CONTRACTOR AND INCLUDED IN THE RECORD DRAWINGS.
10. CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTATION AND ACCURACY OF ALL SEDIMENTATION AND EROSION CONTROL MEASURES DURING CONSTRUCTION.
11. REFER TO GEOSYNTEC SHEETS 3 AND 4 FOR PROPOSED LANDFILL GRADING PLAN.
12. PIPE LOCATION MARKERS: IN AREAS OUTSIDE OF THE PROPOSED STOCKPILE LIMITS, CONTRACTOR SHALL MARK THE LOCATION OF THE BURIED PIPE WITH ABOVE-GROUND SIGNS EVER 50 FEET OF ALIGNMENT AND AT THE BENDS. SIGNS SHALL STATE: "WARNING BURIED LARGE DIAMETER PIPE-DO NOT DIG WITHOUT PRIOR CONSENT FROM WAIMANALO GULCH LANDFILL OPERATOR/OWNER. CALL 808-668-2985 BEFORE ANY ACTIVITY IS TO TAKE PLACE". CONTRACTOR SHALL DEPLOY METAL STRIP OVER CREST OF BURIED PIPE SO THAT BURIED PIPE CAN BE DETECTED. ALTERNATIVES APPROVED BY THE OWNER/OPERATOR MAY ALSO BE USED.
13. PROPERTY OWNER = CITY & COUNTY OF HONOLULU, HI.
14. WORK THESE DRAWINGS WITH GEOSYNTEC DRAWINGS.

GENERAL LEGEND

- POWER POLE
- OHE — ELECTRIC LINES
- EARTH
- ROCK
- APPROXIMATE LOCATION OF POWER POLE TOWERS
- PROPERTY LINE
- FENCE
- TELEPHONE LINES
- WATER SURFACE / DITCH
- SURVEY CONTROL POINT
- GP-3 GAS PROBES
- 34 STATE HIGHWAY
- COUNTY ROAD
- DIRT ROADS
- LIMITS OF CONTRACTOR WORK AREA
- MW-3 MONITORING WELLS
- GW GAS WELL

PLAN MAIN TITLE

0 5 10 20 30
SCALE IN FEET
DRAWING SCALE IN UNITS SPECIFIED

DETAIL OUTLET WORKS — 1 / A-2
DETAIL TITLE. THE NUMBER "1" REFERS TO THE DETAIL DESIGNATION. THE NUMBER "A-2" REFERS TO THE DRAWING NUMBER WHERE THE DETAIL IS CALLED OUT.

SECTION STA. 0+00 — A / A-2
SECTION TITLE. THE LETTER "A" REFERS TO THE SECTION DESIGNATION. THE NUMBER "A-2" REFERS TO THE DRAWING NUMBER WHERE THE SECTION IS CALLED OUT.

A / 10
SECTION LOCATION. THE LETTER "A" REFERS TO THE SECTION DESIGNATION. THE NUMBER "A-2" REFERS TO THE DRAWING NUMBER WHERE THE SECTION IS SHOWN.

A / C-4
DETAIL LOCATION. THE NUMBER "3" REFERS TO THE DETAIL DESIGNATION. THE NUMBER "A-2" REFERS TO THE DRAWING NUMBER WHERE THE DETAIL IS SHOWN.

WASTE MANAGEMENT

Oakland • California GEI Consultants

WILLIAM A. RETTBERG — LICENSED PROFESSIONAL ENGINEER — No. 12473-C — HAWAII, U.S.A.
DATE: 01-13-10

REV.	DESCRIPTION	BY	APP.	DATE
0	ISSUED FOR CONSTRUCTION			01-13-10

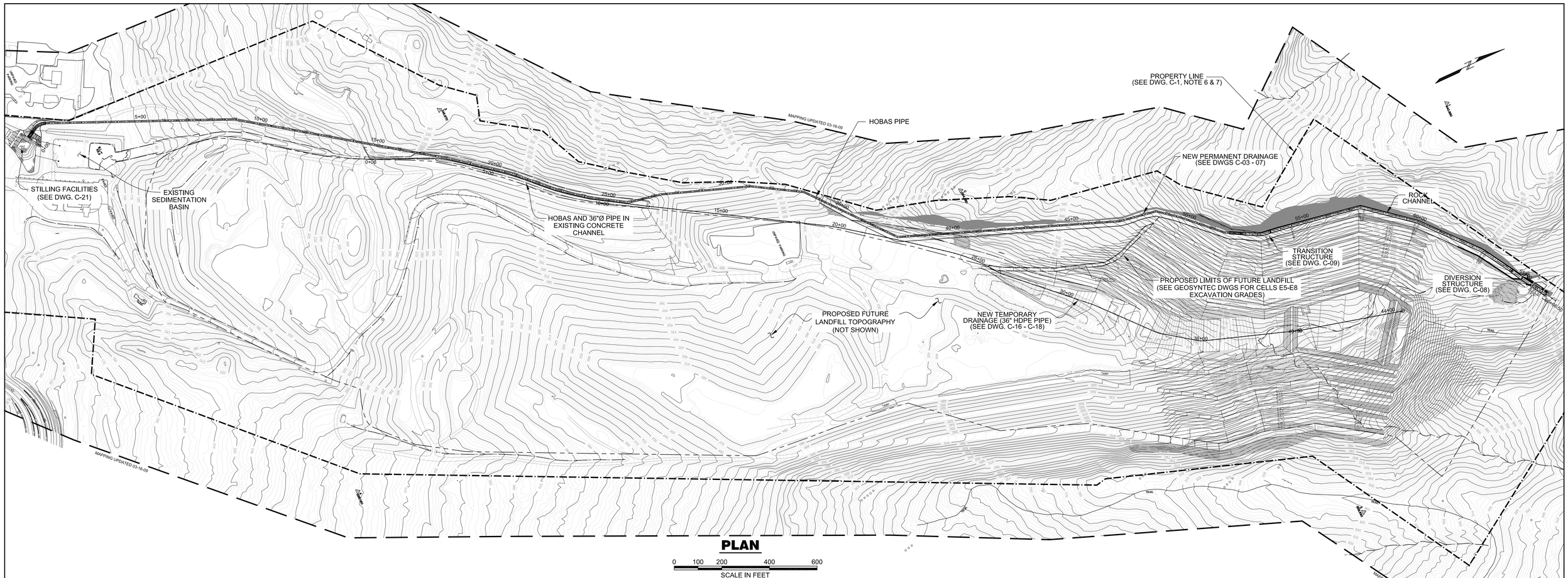
DESIGNED BY:	A. TLABAR
CHECKED BY:	C. ANDERSON
DRAWN BY:	P. MORRISON
CAD FILE NAME:	C-01.dwg
PROJECT NO.	SCALE:
07018-1	AS SHOWN

WAIMANALO GULCH LANDFILL
WESTERN SURFACE WATER DRAINAGE PROJECT
EWA BEACH, OAHU, HAWAII

PROJECT NOTES

DATE: 01/13/10
DRAWING NO.
C-01

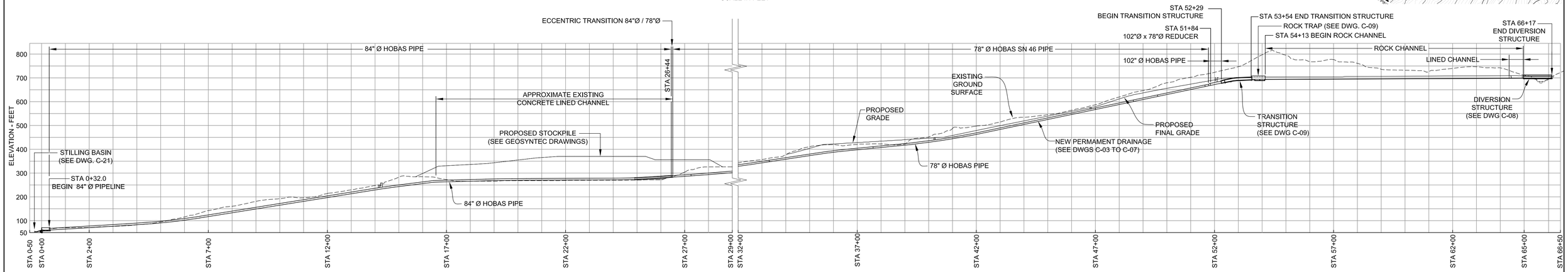
C-01 01-12-10 PYM



PLAN

0 100 200 400 600

SCALE IN FEET



PROFILE

ALONG NEW PIPELINE AND ROCK CHANNEL

0 100 200 400 600

SCALE IN FEET

C-02 01-12-10 PYM

WASTE MANAGEMENT

Oakland • California GEI Consultants

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DATE: 01-13-10

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0	ISSUED FOR CONSTRUCTION			01-13-10

DESIGNED BY:	A. TLABAR
CHECKED BY:	C. ANDERSON
DRAWN BY:	P. MORRISON
CAD FILE NAME:	C-02.dwg
PROJECT NO. 07018-1	SCALE: AS SHOWN

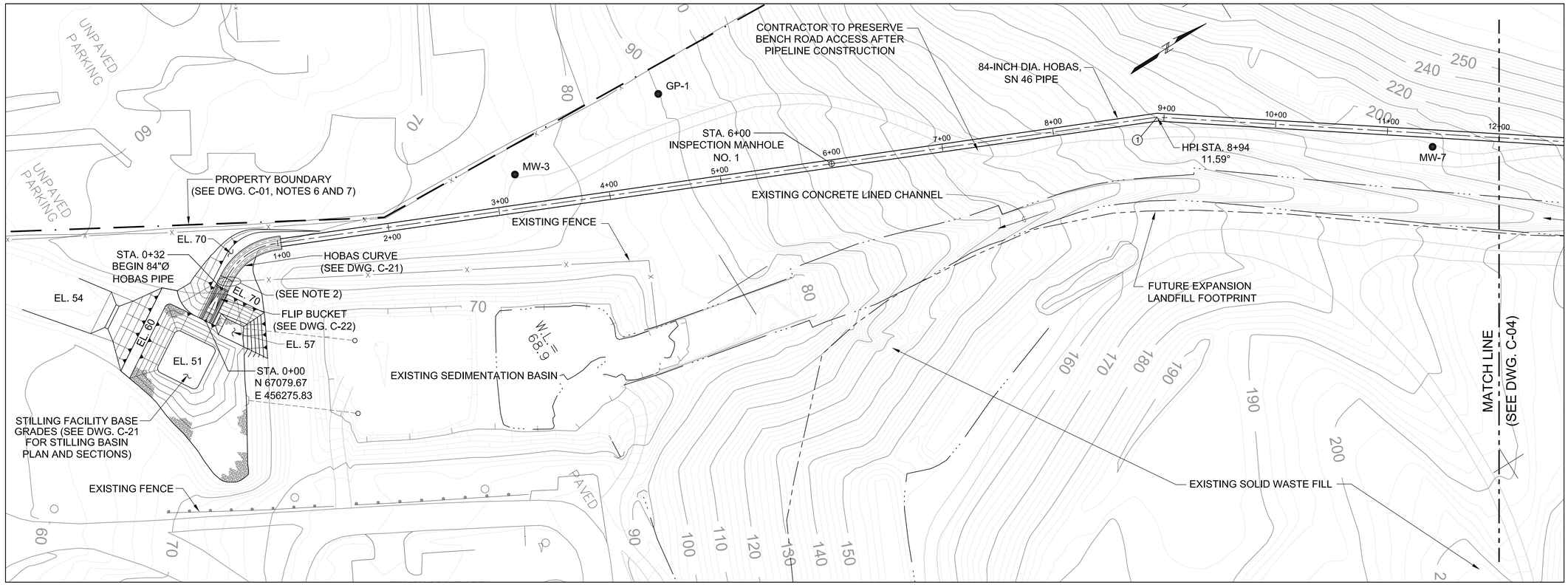
WAIMANALO GULCH LANDFILL
WESTERN SURFACE WATER DRAINAGE PROJECT
EWA BEACH, OAHU, HAWAII

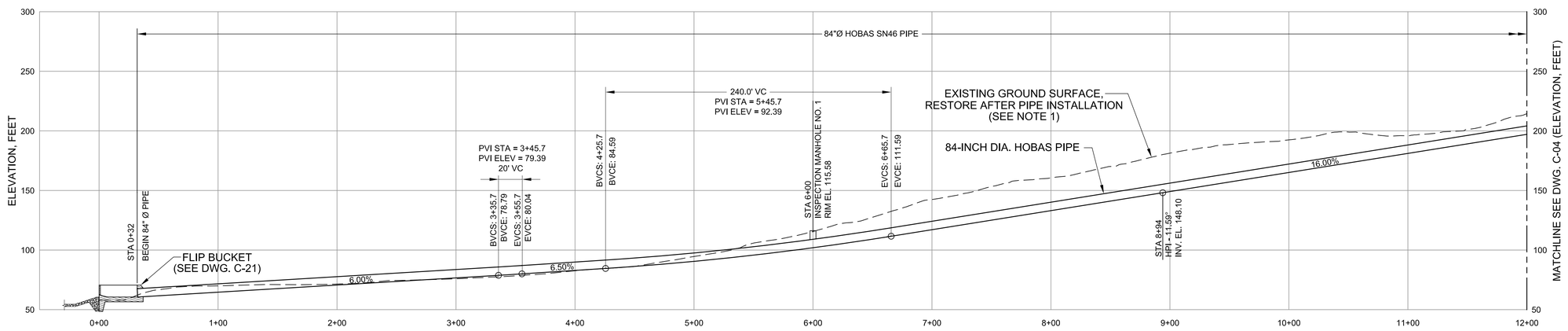
PLAN AND PROFILE OF MODIFICATIONS

DATE: 01/13/10

DRAWING NO.

C-02





NOTES

1. MAINTAIN MINIMUM 3-FOOT COVER OVER PIPELINE, GRADE FILL TO DRAIN TOWARDS LANDFILL.
2. CONTRACTOR TO RESTORE FENCE IN HOBAS CURVE AREA.
3. PIPE DEFLECTION ANGLES OF INDIVIDUAL PIPE SEGMENTS IN ALIGNMENT BENT AREAS SHOULD NOT EXCEED 10 DEGREES, EXCEPT WHERE NOTED ON DRAWINGS. INDIVIDUAL PIPE SEGMENTS SHOULD NOT BE SHORTER THAN 5-FEET.
4. THE CONTRACTOR WILL NEED TO PROVIDE ADEQUATE SPACE IN THE TRENCH FOR LAYING OUT HOBAS PIPE SEGMENTS IN ALIGNMENT BENT AREAS.

WASTE MANAGEMENT

Oakland • California GEI Consultants

WILLIAM A. RETTBERG LICENSED PROFESSIONAL ENGINEER No. 12473-C HAWAII, U.S.A.
DATE: 01-13-10

REV.	DESCRIPTION	BY	APP.	DATE
0	ISSUED FOR CONSTRUCTION			01-13-10

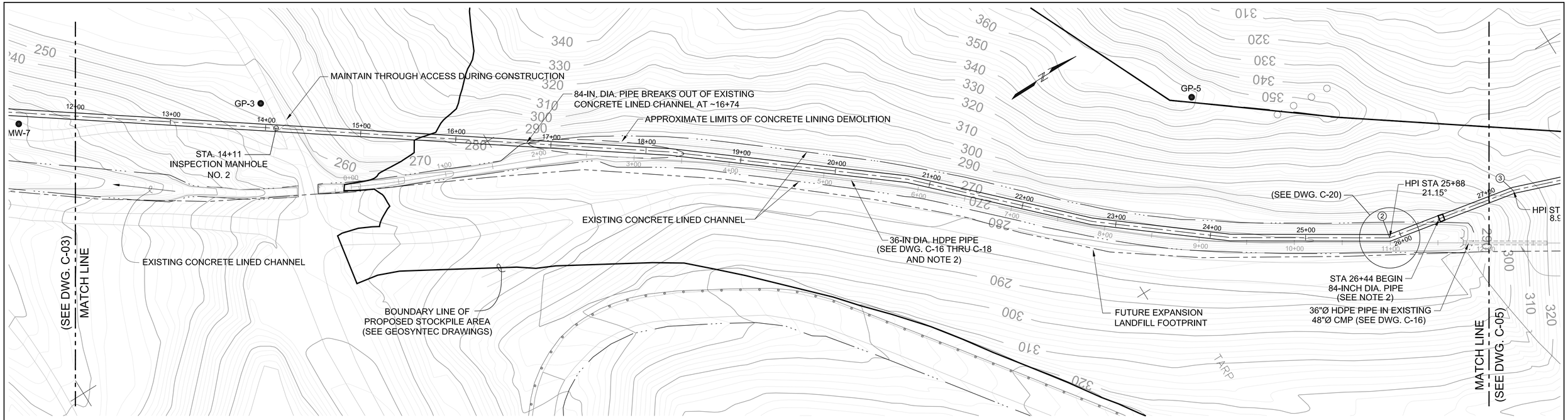
DESIGNED BY:	A. TLABAR
CHECKED BY:	C. ANDERSON
DRAWN BY:	P. MORRISON
CAD FILE NAME:	C-03.dwg
PROJECT NO. 07018-1	SCALE: AS SHOWN

WAIMANALO GULCH LANDFILL
WESTERN SURFACE WATER DRAINAGE PROJECT
EWA BEACH, OAHU, HAWAII

PLAN AND PROFILE
PERMANENT DRAINAGE
STA. 0+00 TO STA. 12+00

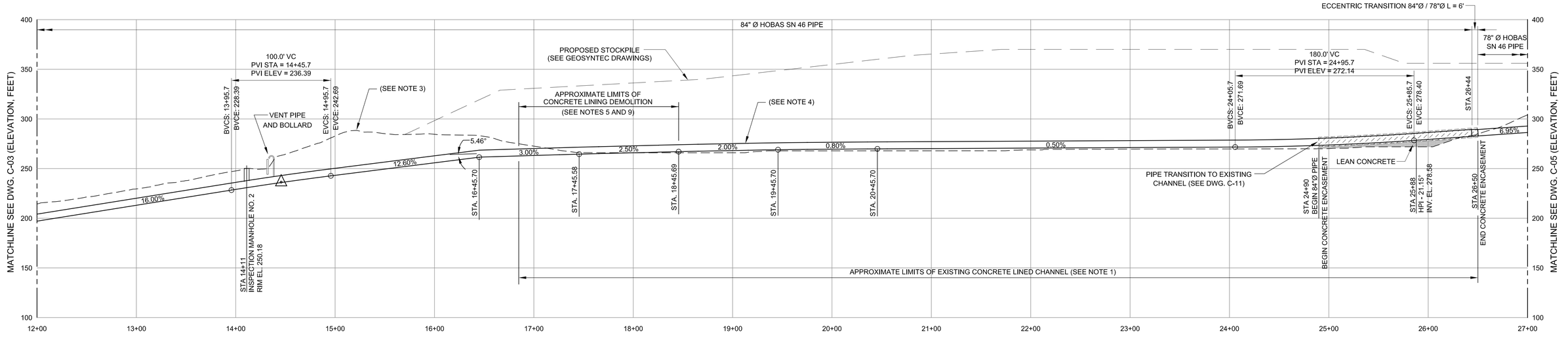
DATE: 01/13/10
DRAWING NO.
C-03

C-03 12/31/09 PYM



NOTES:

1. THE EXISTING CONCRETE LINED CHANNEL IS DEPICTED ON A DESIGN DRAWING BY KWOCK AND ASSOCIATES, SHEET 5 OF 20, DATED 11/4/91, FROM THE PLAN SET TITLED, WAIMANALO GULCH SANITARY LANDFILL, DRAINAGE CHANNEL EXTENSION. THE CONTRACTOR WILL NEED TO CONFIRM THE CHANNEL INVERT LOCATION AND GRADE BASED ON A FIELD SURVEY OF THE CHANNEL.
2. SEE SECTION B, DRAWING C-20 FOR 84" TYPICAL DETAIL OF HOBAS PIPE AND 36" HDPE PIPE IN CONCRETE LINED CHANNEL.
3. CONTRACTOR TO RESTORE EXISTING GRADE AFTER PIPE INSTALLATION.
4. MAINTAIN MINIMUM 3-FOOT COVER OVER PIPELINE, GRADE FILL TO DRAIN.
5. HOBAS PIPE INVERT BREAKS THROUGH EXISTING CHANNEL INVERT AT APPROXIMATE STATION 18+01. ACTUAL LOCATION OF THE BREAK THROUGH POINT TO BE CONFIRMED BY THE CONTRACTOR DURING STAKING OF PIPELINE ALIGNMENT.
6. CONTRACTOR SHALL PROVIDE 20-FOOT STRIP OF ORANGE POLYPROPYLENE SAFETY FENCE, 3-FEET ABOVE THE BURIED PIPE CROWN WITHIN THE AREA OF THE PROPOSED STOCKPILE.
7. PIPE DEFLECTION ANGLES OF INDIVIDUAL PIPE SEGMENTS IN ALIGNMENT BENT AREAS SHOULD NOT EXCEED 10 DEGREES, EXCEPT WHERE NOTED ON DRAWINGS. INDIVIDUAL PIPE SEGMENTS SHOULD NOT BE SHORTER THAN 5-FEET.
8. THE CONTRACTOR WILL NEED TO PROVIDE ADEQUATE SPACE IN THE TRENCH FOR LAYING OUT HOBAS PIPE SEGMENTS IN ALIGNMENT BENT AREAS.
9. MAINTAIN A MINIMUM 6-INCH CLSM PIPE BEDDING THICKNESS BENEATH HOBAS PIPE INVERT IN CONCRETE LINING DEMOLITION AREA.



0 50 100
SCALE, FEET

WASTE MANAGEMENT

Oakland California GEI Consultants

WILLIAM A. RETTBERG LICENSED PROFESSIONAL ENGINEER No. 12473-C HAWAII, U.S.A.
DATE: 01-13-10

REV.	DESCRIPTION	BY	APP.	DATE
0	ISSUED FOR CONSTRUCTION			01-13-10

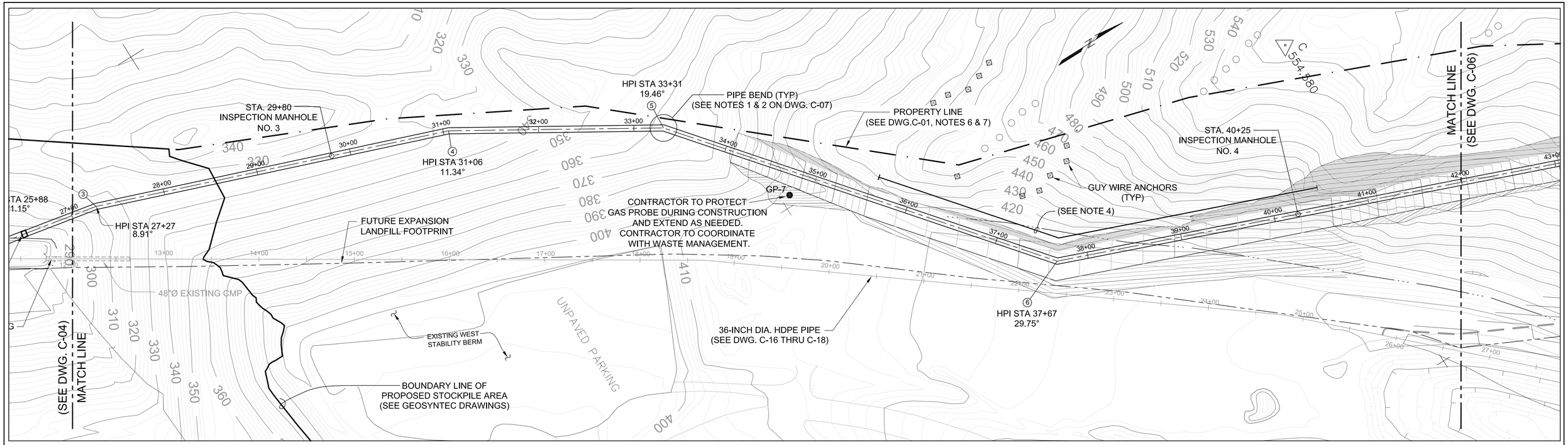
DESIGNED BY:	A. TLABAR
CHECKED BY:	C. ANDERSON
DRAWN BY:	P. MORRISON
CAD FILE NAME:	C-04.dwg
PROJECT NO. 07018-1	SCALE: AS SHOWN

WAIMANALO GULCH LANDFILL
WESTERN SURFACE WATER DRAINAGE PROJECT
EWA BEACH, OAHU, HAWAII

PLAN AND PROFILE
PERMANENT DRAINAGE
STA. 12+00 TO STA. 27+00

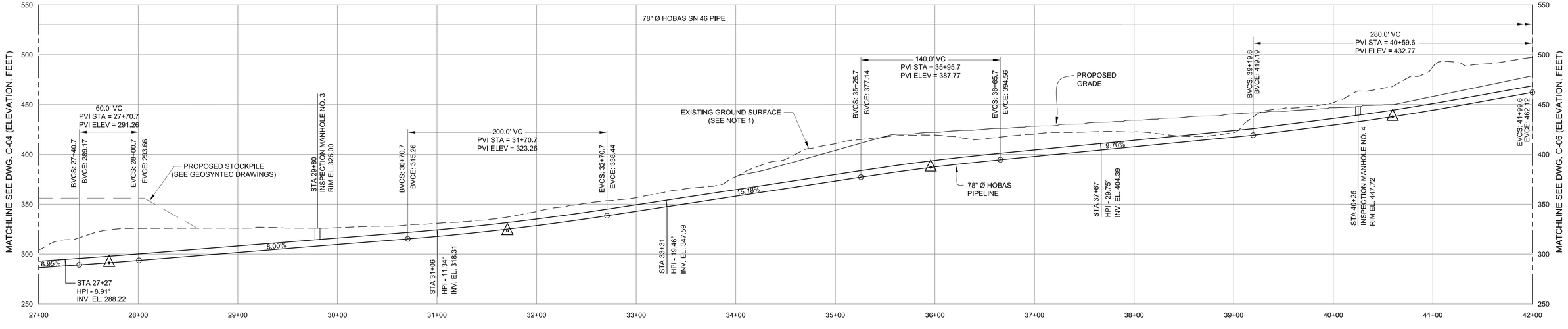
DATE: 01/13/10
DRAWING NO. C-04

C-04 12/31/09 PYM



NOTES:

1. MAINTAIN MINIMUM 3-FOOT COVER OVER PIPELINE, GRADE FILL TO DRAIN.
2. PIPE DEFLECTION ANGLES OF INDIVIDUAL PIPE SEGMENTS IN ALIGNMENT BENT AREAS SHOULD NOT EXCEED 10 DEGREES, EXCEPT WHERE NOTED ON DRAWINGS. INDIVIDUAL PIPE SEGMENTS SHOULD NOT BE SHORTER THAN 5-FEET.
3. THE CONTRACTOR WILL NEED TO PROVIDE ADEQUATE SPACE IN THE TRENCH FOR LAYING OUT HOBAS PIPE SEGMENTS IN ALIGNMENT BENT AREAS.
4. BETWEEN STATIONS 35+62 AND 40+50 FUTURE WEST BERM CONFIGURATION WILL ACCOMODATE PIPE ALIGNMENT FOR FUTURE PERIMETER ROAD THROUGH ACCESS.



0 50 100
SCALE, FEET

WASTE MANAGEMENT

Oakland
California
GEI Consultants

WILLIAM A. RETTBERG
LICENSED PROFESSIONAL ENGINEER
No. 12473-C
HAWAII, U.S.A.
DATE: 01-13-10

REV.	DESCRIPTION	BY	APP.	DATE
0	ISSUED FOR CONSTRUCTION			01-13-10

DESIGNED BY:	A. TLABAR
CHECKED BY:	C. ANDERSON
DRAWN BY:	P. MORRISON
CAD FILE NAME:	C-05.dwg
PROJECT NO.	SCALE:
07018-1	AS SHOWN

WAIMANALO GULCH LANDFILL
WESTERN SURFACE WATER DRAINAGE PROJECT
EWA BEACH, OAHU, HAWAII

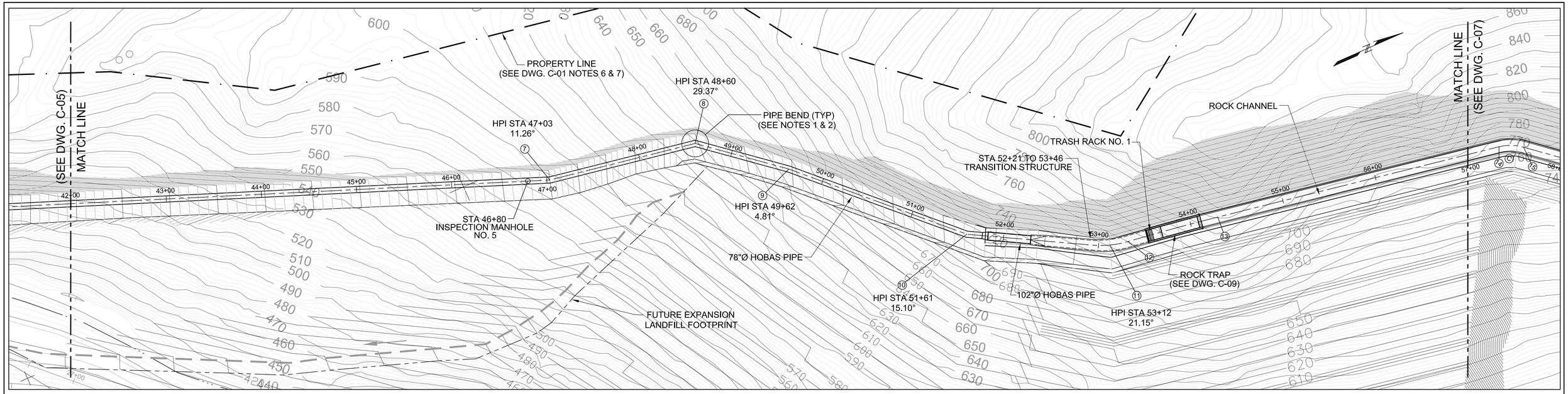
PLAN AND PROFILE
PERMANENT DRAINAGE
STA. 27+00 TO STA. 42+00

DATE: 01/13/10

DRAWING NO.

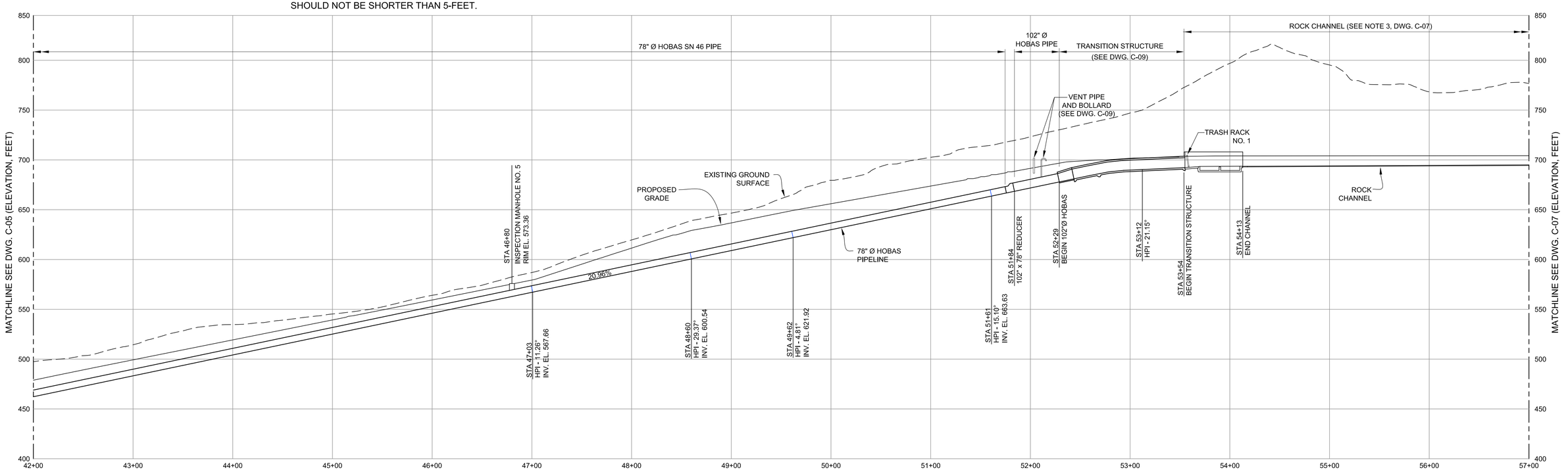
C-05

C-05 12/21/09 PYM



NOTES

1. PIPE DEFLECTION ANGLES OF INDIVIDUAL PIPE SEGMENTS IN ALIGNMENT BENT AREAS SHOULD NOT EXCEED 5 DEGREES, EXCEPT WHERE NOTED ON DRAWINGS. INDIVIDUAL PIPE SEGMENTS SHOULD NOT BE SHORTER THAN 5-FEET.
2. THE CONTRACTOR WILL NEED TO PROVIDE ADEQUATE SPACE IN THE TRENCH FOR LAYING OUT HOBAS PIPE SEGMENTS IN ALIGNMENT BENT AREAS.



0 50 100
SCALE, FEET

WASTE MANAGEMENT

Oakland • California
GEI Consultants

WILLIAM A. RETTBERG
LICENSED PROFESSIONAL ENGINEER
No. 12473-C
HAWAII, U.S.A.
DATE: 01-13-10

REV.	DESCRIPTION	BY	APP.	DATE
0	ISSUED FOR CONSTRUCTION			01-13-10

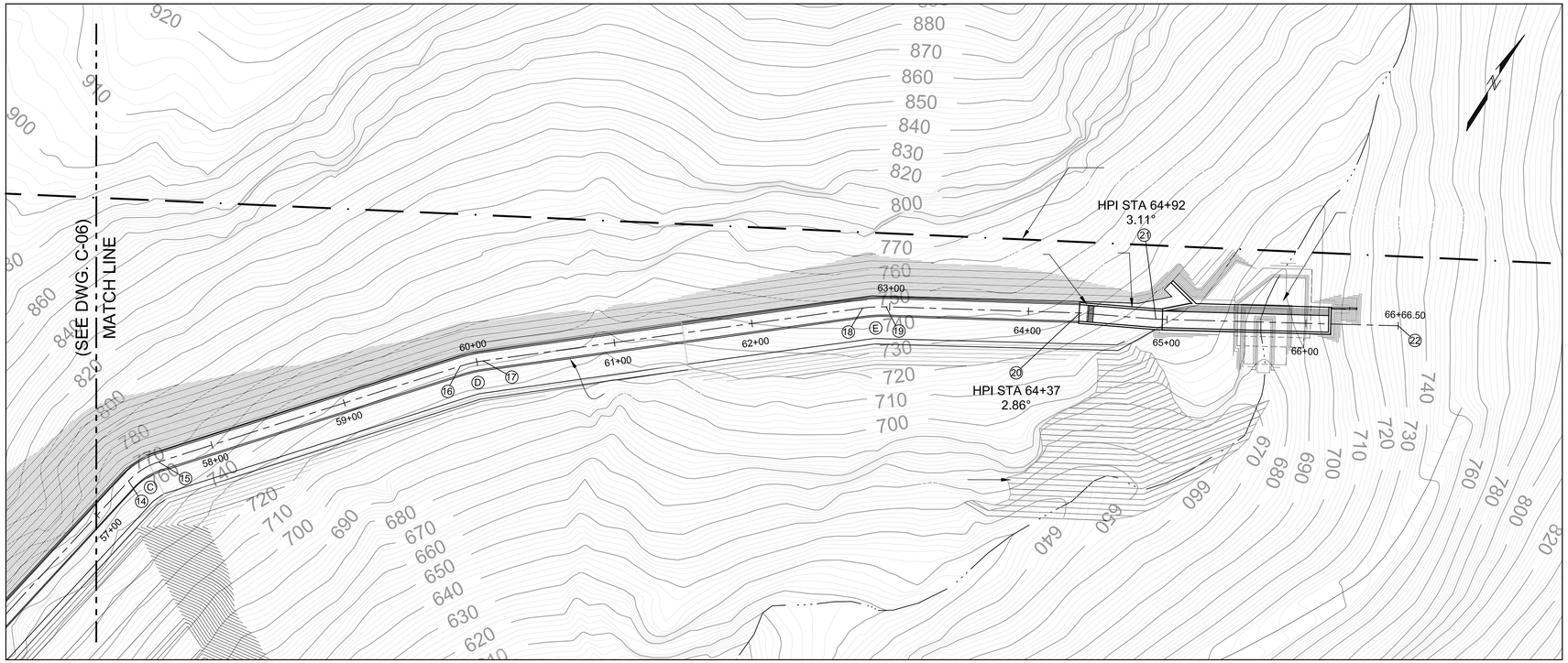
DESIGNED BY:	A. TLABAR
CHECKED BY:	C. ANDERSON
DRAWN BY:	P. MORRISON
CAD FILE NAME:	C-06.dwg
PROJECT NO. 07018-1	SCALE: AS SHOWN

WAIMANALO GULCH LANDFILL
WESTERN SURFACE WATER DRAINAGE PROJECT
EWA BEACH, OAHU, HAWAII

PLAN AND PROFILE
PERMANENT DRAINAGE
STA. 42+00 TO STA. 57+00

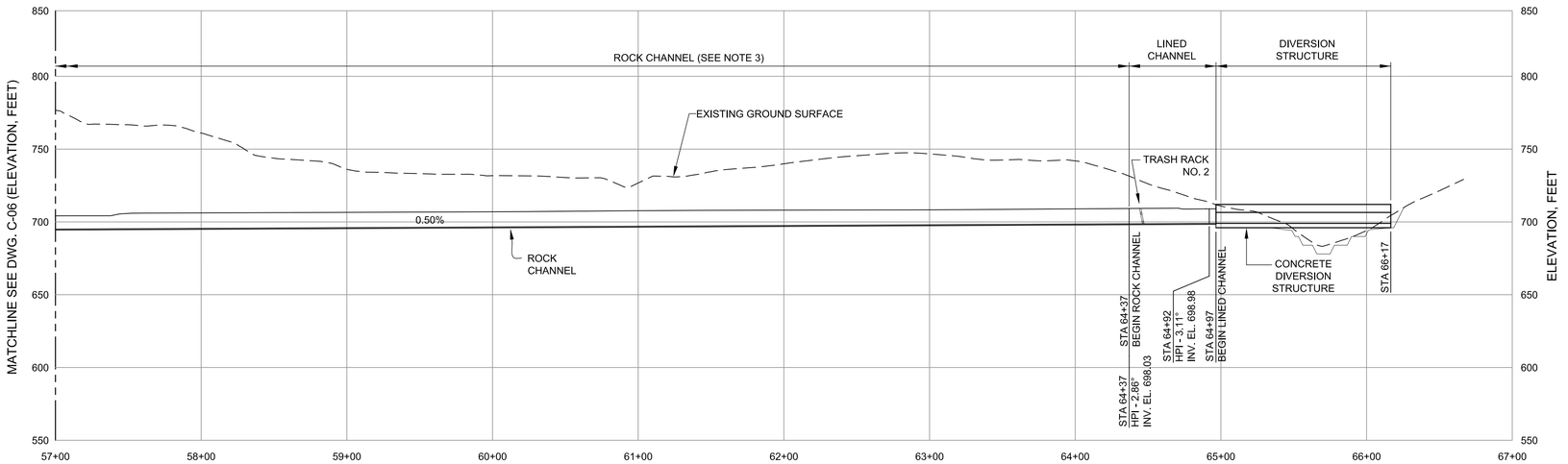
DATE: 01/13/10
DRAWING NO.
C-06

C-06 12/21/09 PYM



HORIZONTAL LAYOUT DATA			
POINT NO.	STATION	NORTHING	EASTING
1	8+93.9	67897.27	456571.43
2	25+88.3	69249.64	457587.36
3	27+27.2	69385.98	457613.72
4	31+05.8	69741.90	457742.24
5	33+31.1	69934.84	457859.07
6	37+67.4	70211.44	458196.46
7	47+03.1	71085.56	458530.37
8	48+60.4	71240.61	458556.71
9	49+62.3	71319.78	458620.86
10	51+61.2	71463.29	458758.61
11	53+12.2	71595.68	458831.17
12	53+43.3	71626.55	458835.27
13	54+29.5	71711.70	458848.23
14	57+33.7	72011.59	458899.62
15	57+59.6	72034.89	458910.27
16	59+87.6	72211.04	459055.03
17	60+04.6	72223.16	459066.84
18	62+80.5	72403.74	459275.44
19	62+97.5	72413.73	459289.18
20	64+36.5	72485.63	459408.18
21	64+91.8	72511.80	459456.83
22	66+66.5	72602.80	459605.99

HORIZONTAL CURVE DATA		
CURVE NO.	RADIUS	DELTA
A	57.33'	55°23'04"
B	2300.00'	02°08'45"
C	50.00'	29°49'35"
D	100.00'	09°42'16"
E	100.00'	08°19'40"



NOTES

1. PIPE DEFLECTION ANGLES OF INDIVIDUAL PIPE SEGMENTS IN ALIGNMENT BENT AREAS SHOULD NOT EXCEED 10 DEGREES, EXCEPT WHERE NOTED ON DRAWINGS. INDIVIDUAL PIPE SEGMENTS SHOULD NOT BE SHORTER THAN 5-FEET.
2. THE CONTRACTOR WILL NEED TO PROVIDE ADEQUATE SPACE IN THE TRENCH FOR LAYING OUT HOBAS PIPE SEGMENTS IN ALIGNMENT BENT AREAS.
3. PERMANENTLY MOUNTED FLEXIBLE LADDERS SHALL BE PROVIDED AT MAXIMUM 300-FOOT SPACING ALONG THE ROCK CHANNEL AT LOCATIONS TO BE DETERMINED BY THE ENGINEER. THE FLEXIBLE LADDER SHALL HAVE ALUMINUM ALLOY RUNGS AND GALVANIZED STEEL WIRE ROPE SIDES, WITH A MINIMUM RUNG BREAKING LOAD OF 1,000 POUNDS. THE LADDER RUNG DIMENSIONS AND PLACEMENT IN THE CHANNEL SHALL CONFORM TO OSHA 29 CFR 1910, SUBPART D, SECTION 1901.27.

0 50 100
SCALE, FEET

WASTE MANAGEMENT

Oakland • California
GEI Consultants

WILLIAM A. RETTBERG
LICENSED PROFESSIONAL ENGINEER
No. 12473-C
HAWAII, U.S.A.
DATE: 01-13-10

REV.	DESCRIPTION	BY	APP.	DATE
0	ISSUED FOR CONSTRUCTION			01-13-10

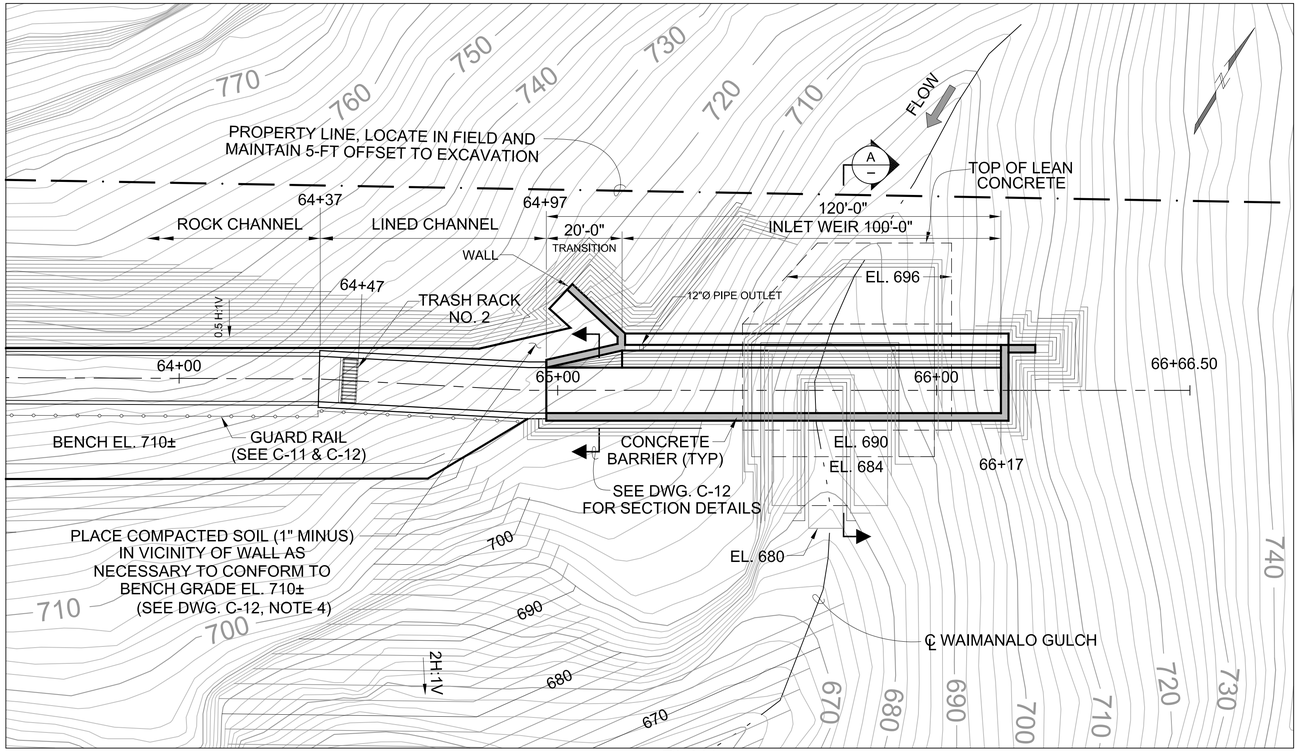
DESIGNED BY:	A. TLABAR
CHECKED BY:	C. ANDERSON
DRAWN BY:	P. MORRISON
CAD FILE NAME:	C-07.dwg
PROJECT NO. 07018-1	SCALE: AS SHOWN

WAIMANALO GULCH LANDFILL
WESTERN SURFACE WATER DRAINAGE PROJECT
EWA BEACH, OAHU, HAWAII

PLAN AND PROFILE
PERMANENT DRAINAGE
STA. 57+00 TO STA. 67+00

DATE: 01/13/10
DRAWING NO.
C-07

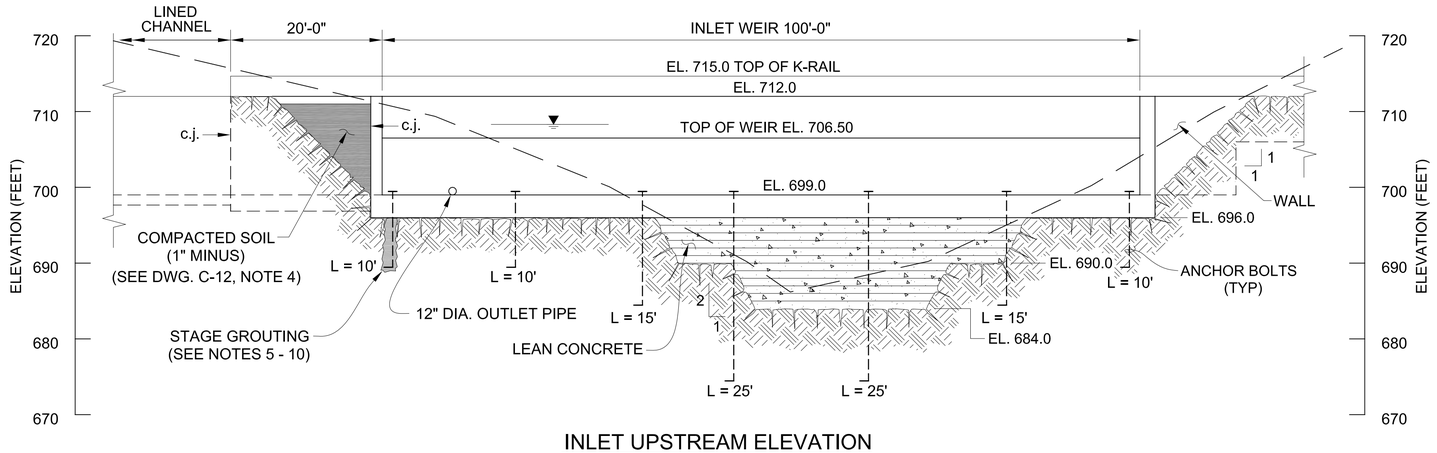
C-07 12/24/09 PYM



PLAN

0 20 40 60

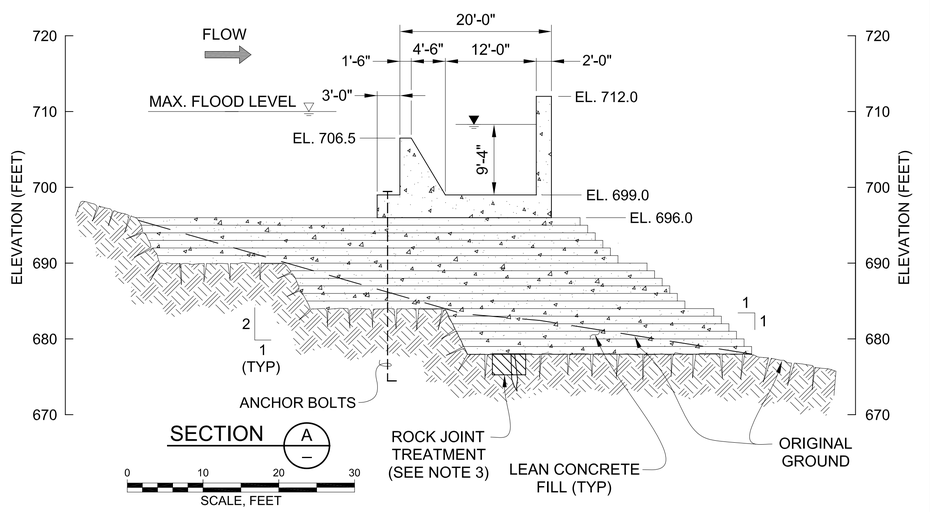
SCALE, FEET



INLET UPSTREAM ELEVATION

0 10 20 30

SCALE, FEET



SECTION A

0 10 20 30

SCALE, FEET

NOTES:

FOUNDATION PREPARATION

1. CONCRETE SHALL BE PLACED ON PREPARED EXCAVATION SURFACES.
2. SURFACES TO RECEIVE CONCRETE PLACEMENT SHALL BE PREPARED BY REMOVING ALL TOP SOIL, AND WEATHERED ROCK.
3. WITHIN THE PREPARED FOUNDATION AREA ALL OPEN ROCK JOINTS SHALL BE TREATED BY FILLING WITH CONCRETE DOWN TO TWICE THE WIDTH OF THE OPENING.

CONCRETE WORKS

4. DIVERSION STRUCTURE SHALL BE FOUNDED ON PREPARED ROCK SURFACES OR ON LEAN CONCRETE PLACED TO FORM A LEVELED AND SOUND FOUNDATION.

STAGE GROUTING

5. GROUTING SHALL BE CARRIED OUT IN TWO STAGES. IN THE FIRST STAGE, 38-MM (1.5-IN) HOLES SHALL BE DRILLED THROUGH CONCRETE AT A MINIMUM 3-FT DEPTH IN ROCK FOR CONTACT GROUTING AT 1 BAR (15-PSI) PRESSURE WITH A PACKER IN CONCRETE. AFTER THE FIRST STAGE GROUTING, THE HOLE IS WASHED OUT OR RE-DRILLED FOR SUBSEQUENT GROUTING STAGE.
6. ALL OF THE FIRST STAGE HOLES SHALL BE GROUTED PRIOR TO COMMENCING THE SECOND STAGE GROUTING.
7. THE SECOND STAGE GROUTING SHALL BE DONE AT 3.5 BAR PRESSURE STARTING FROM THE BOTTOM TO TOP, WITH A PACKER PLACED FOR 5-FT STAGE.
8. THE SECOND STAGE GROUTING OF THE HOLE SHALL BE STOPPED AT REFUSAL. THEN A 1-IN DIAMETER REBAR SHALL BE INSERTED INTO THE GROUT HOLE BEFORE GROUT SETS IN.
9. THE UPPER END OF THE REBAR ANCHOR, THREADED FOR BOLT INSTALLATION, WILL BE TIGHTENED AGAINST CONCRETE USING A PLATE WASHER.
10. TWO COATS OF EPOXY BASE PROTECTIVE PAINT SHALL BE APPLIED ON TOP OF REBAR ANCHORS.

WASTE MANAGEMENT

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WILLIAM A. RETTBERG LICENSED PROFESSIONAL ENGINEER No. 12473-C HAWAII, U.S.A.

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0	ISSUED FOR CONSTRUCTION			01-13-10

DESIGNED BY:	A. TLABAR
CHECKED BY:	C. ANDERSON
DRAWN BY:	P. MORRISON
CAD FILE NAME:	C-08.dwg
PROJECT NO. 07018-1	SCALE: AS SHOWN

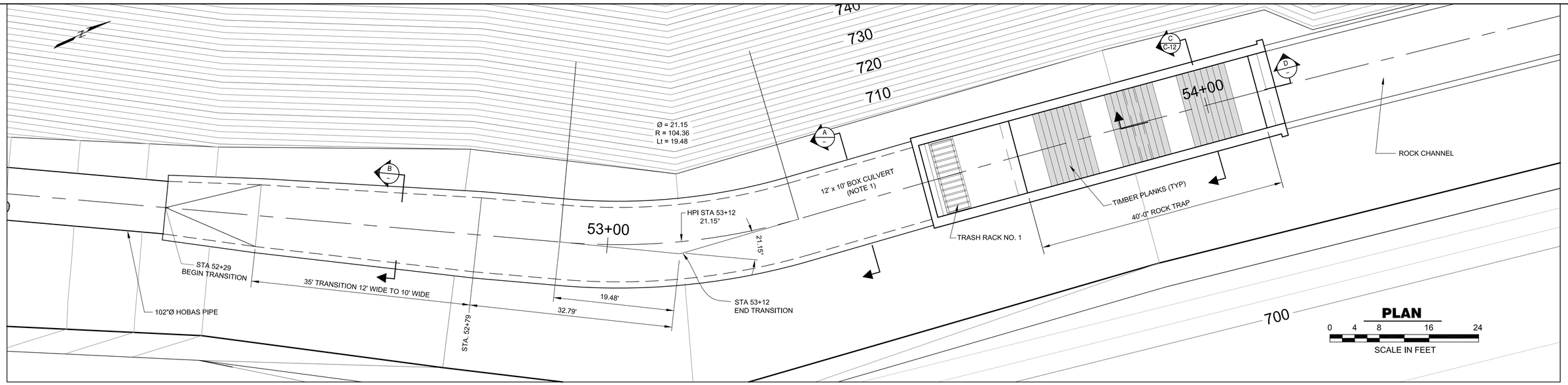
WAIMANALO GULCH LANDFILL
WESTERN SURFACE WATER DRAINAGE PROJECT
EWA BEACH, OAHU, HAWAII

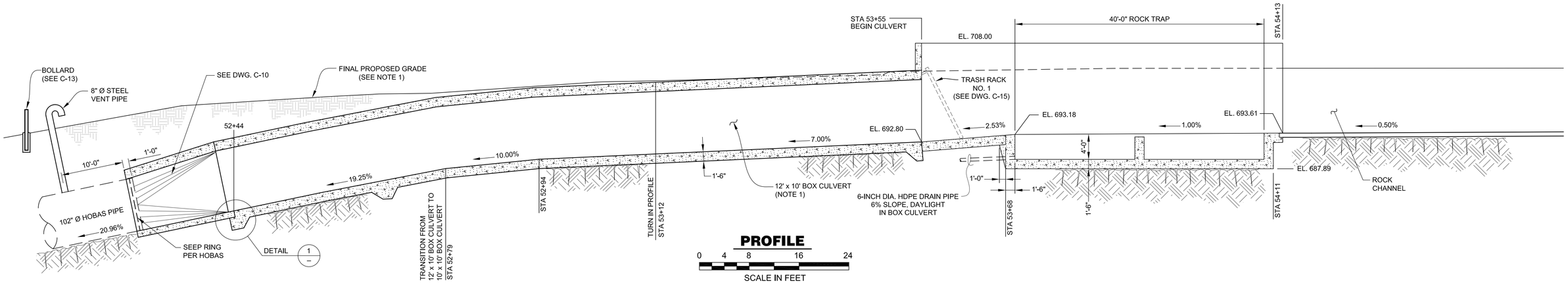
DIVERSION STRUCTURE PLAN AND SECTIONS

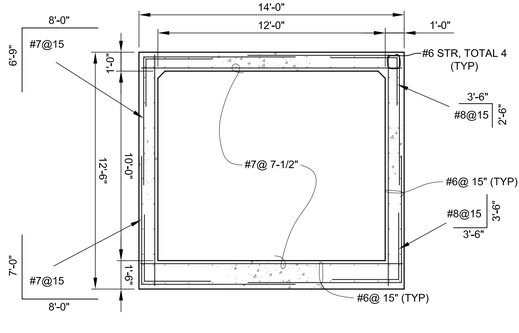
DATE: 01/13/10

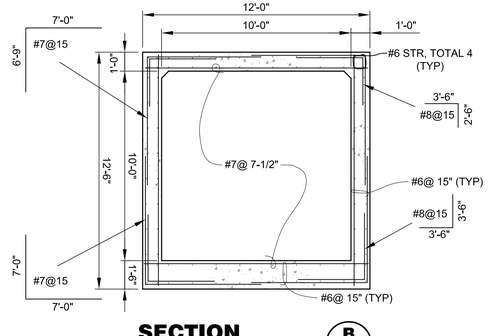
DRAWING NO. C-08

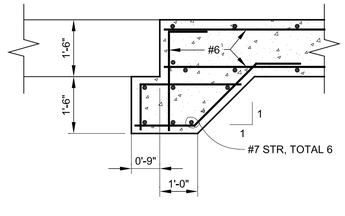
C-08 12/24/09 PYM

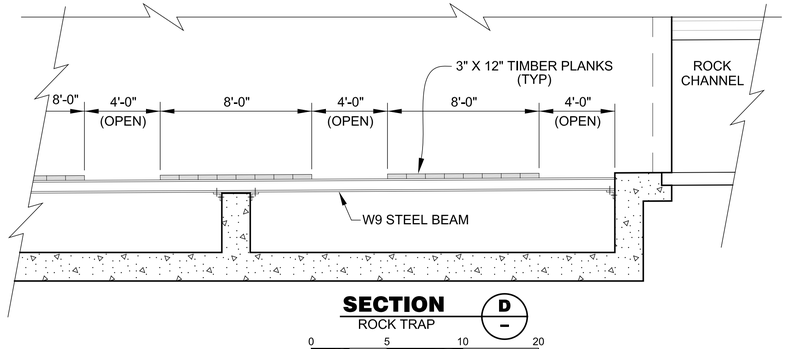












NOTE:

1. MAINTAIN MINIMUM 2-FOOT COVER OVER BOX CULVERT. GRADE FILL TO DRAIN.

WASTE MANAGEMENT

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California
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DATE: 01-13-10

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0	ISSUED FOR CONSTRUCTION			01-13-10

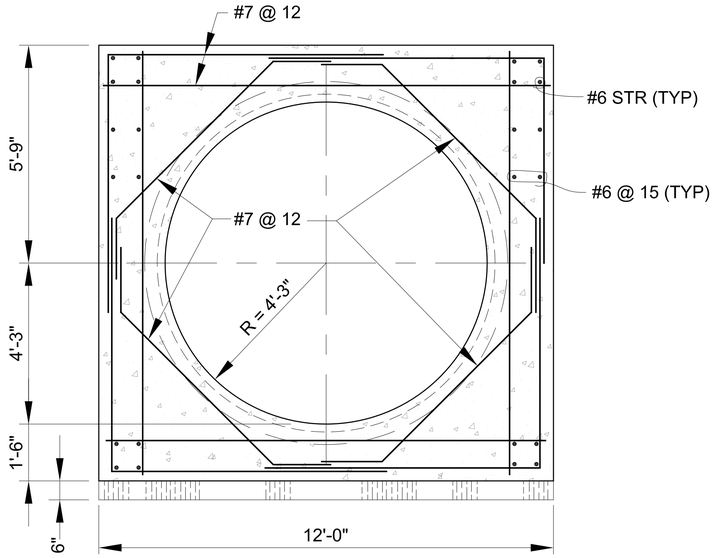
DESIGNED BY:	A. TLABAR
CHECKED BY:	C. ANDERSON
DRAWN BY:	P. MORRISON
CAD FILE NAME:	C-06.dwg
PROJECT NO. 07018-1	SCALE: AS SHOWN

WAIMANALO GULCH LANDFILL
WESTERN SURFACE WATER DRAINAGE PROJECT
EWA BEACH, OAHU, HAWAII

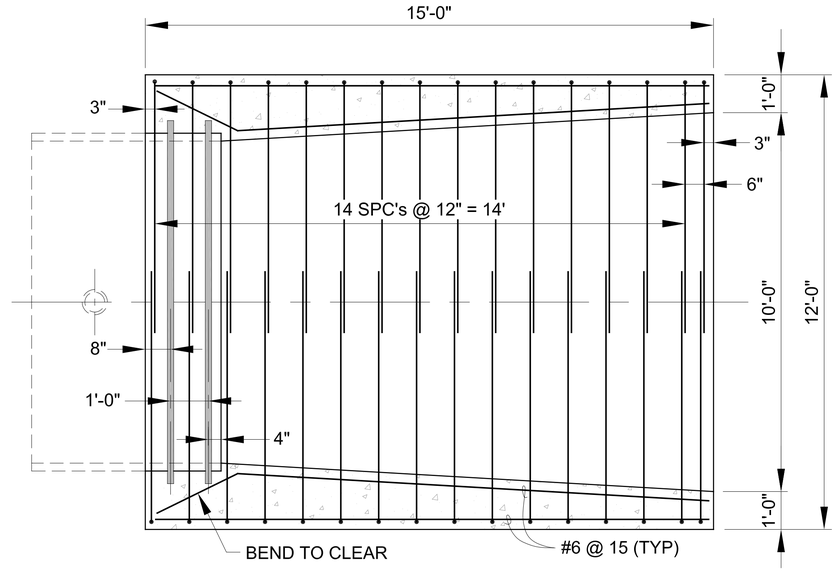
TRANSITION STRUCTURE PLAN AND SECTIONS

DATE: 01/13/10
DRAWING NO.
C-09

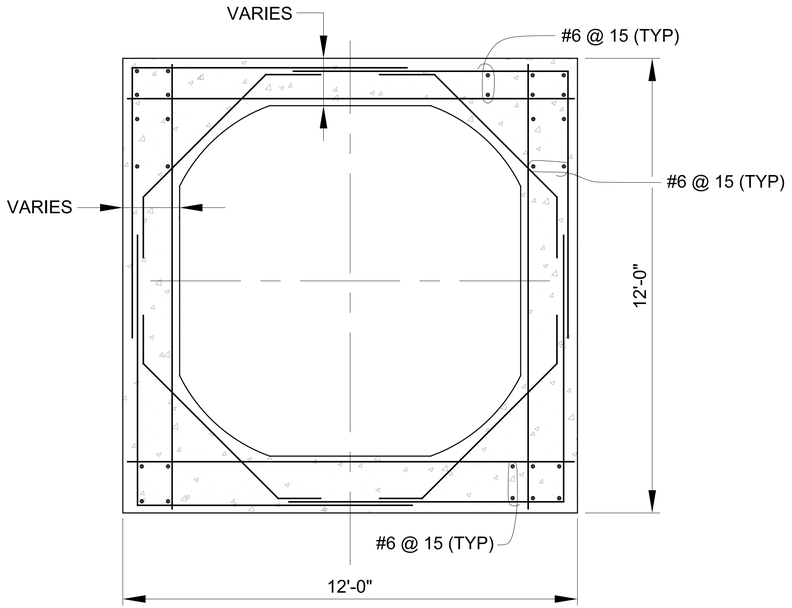
C-09 12/24/09 PYM



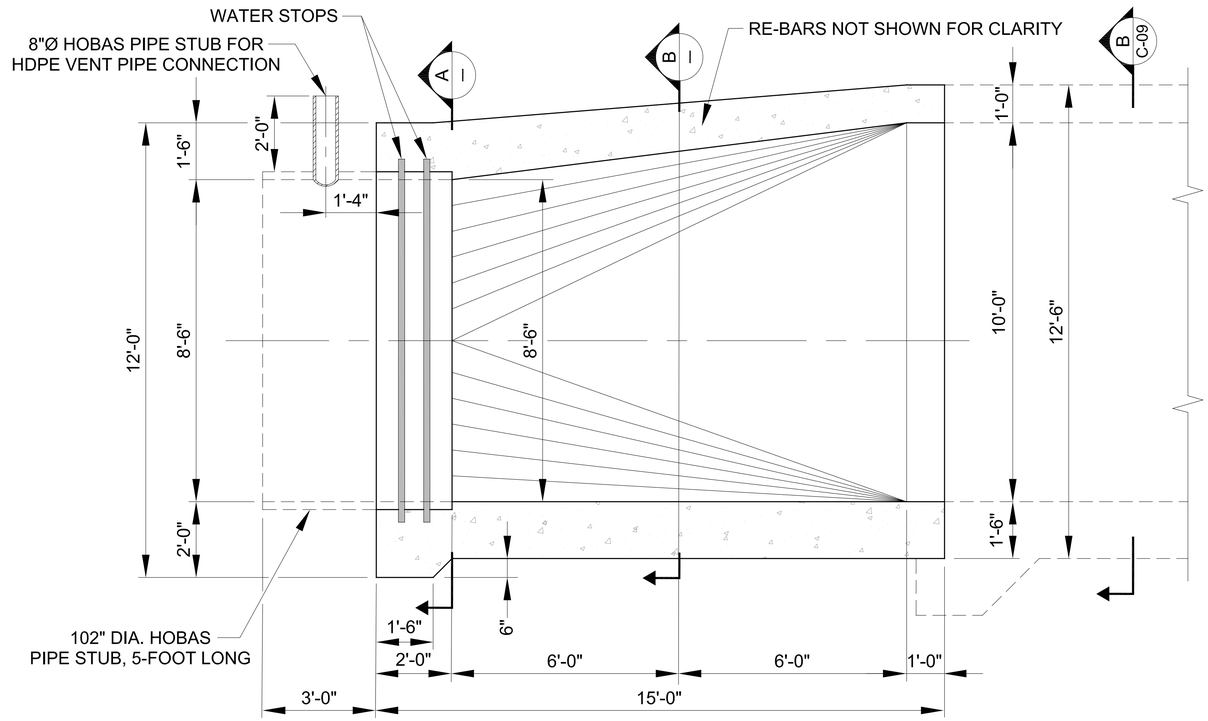
SECTION A



PLAN - TOP VIEW



SECTION B



TRANSITION - LONGITUDINAL SECTION

NOTES:

1. FOR STRUCTURAL NOTES SEE C-14.
2. DESIGN STRENGTH OF CONCRETE IS 4000 PSI.
3. REINFORCEMENT STEEL SHALL COMPLY WITH THE REQUIREMENTS OF ASTM A615 GRADE 60 DEFORMED BARS.

0 1 2 4 8
SCALE IN FEET

WASTE MANAGEMENT

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WILLIAM A. RETTBERG
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No. 12473-C
HAWAII, U.S.A.
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DESIGNED BY:	A. TLABAR
CHECKED BY:	C. ANDERSON
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CAD FILE NAME:	C-10.dwg
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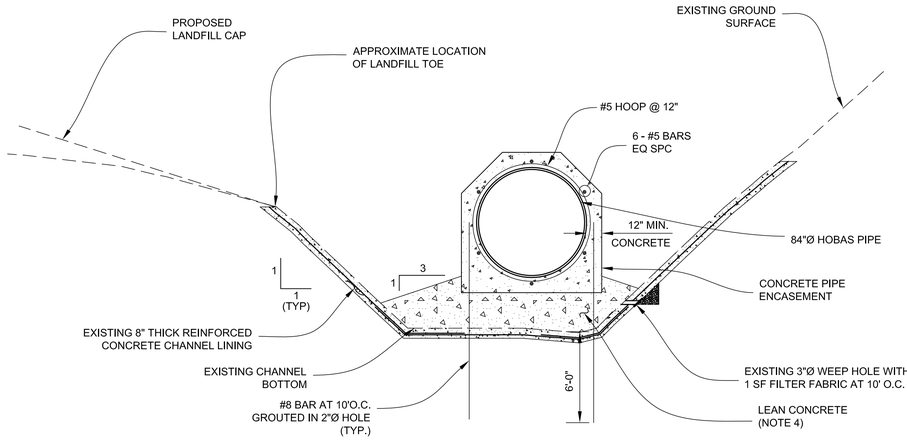
WAIMANALO GULCH LANDFILL
WESTERN SURFACE WATER DRAINAGE PROJECT
EWA BEACH, OAHU, HAWAII

TRANSITION STRUCTURE PLAN & SECTIONS
STA 52+44

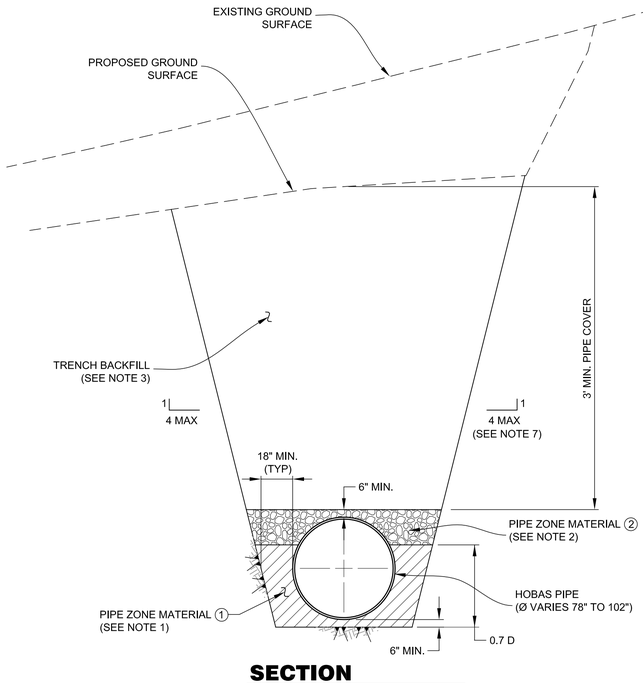
DATE: 01/13/10
DRAWING NO.
C-10

C-10 12/23/09 PYM



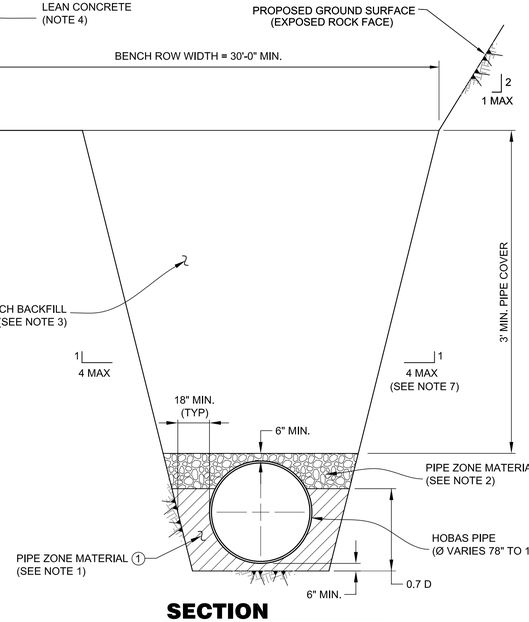
SECTION
PIPE TO EXISTING CHANNEL
STA 24+90 TO 26+34

0 2.5 5 10 15
SCALE IN FEET



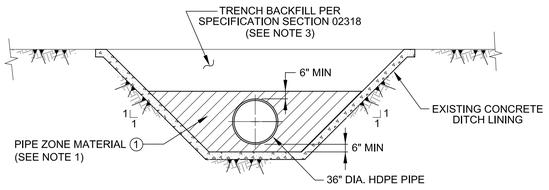
SECTION
TYPICAL PIPE SECTION
OUTSIDE OF BENCH AREAS

NOT TO SCALE



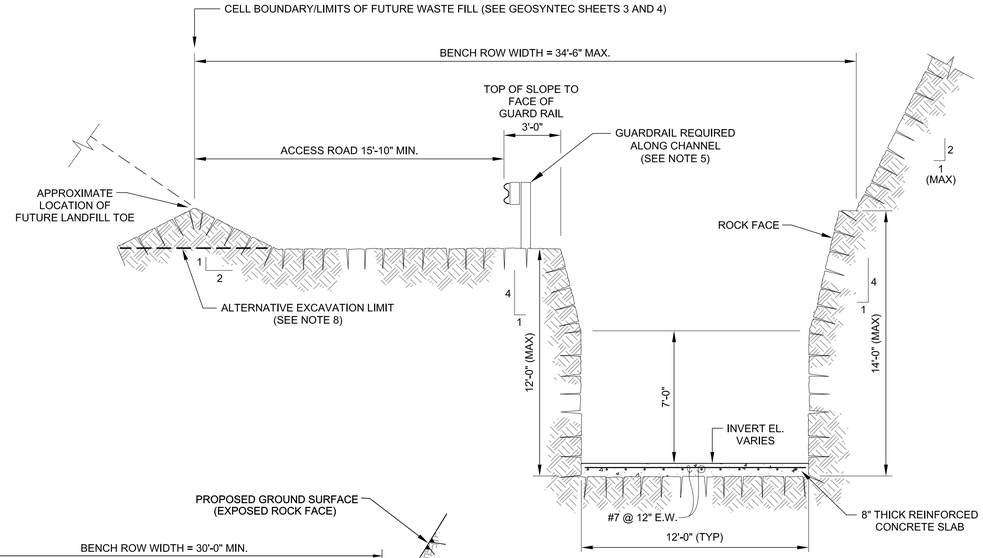
SECTION
TYPICAL PIPE SECTION
BENCH AREAS WITHOUT LINER TERMINATION
APPROX. STA 34+08 TO 48+36

NOT TO SCALE



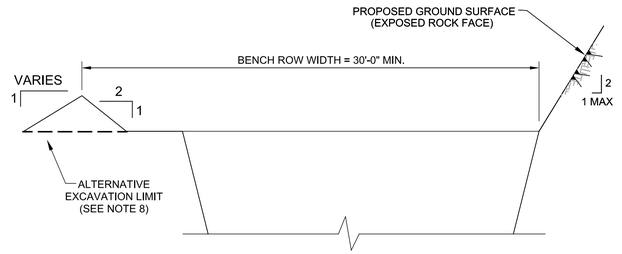
36" HDPE PIPE SECTION
STA 0+00 TO 2+00

0 2.5 5 10 15
SCALE IN FEET



SECTION
TYPICAL ROCK CHANNEL SECTION
STA 54+13 TO 64+37 (EXCEPT AT TRASHRACK LOCATIONS)

0 2 4 8 12
SCALE IN FEET



SECTION
TYPICAL PIPE SECTION
BENCH AREAS FOR FUTURE LINER TERMINATION
STA 48+36 TO STA 52+29

NOT TO SCALE

NOTES:

1. PIPE ZONE MATERIAL SHALL BE CLSM MEETING SPECIFICATION REQUIREMENTS OF SECTION 02331.
2. PIPE ZONE MATERIAL SHALL MEET SPECIFICATION REQUIREMENTS OF SECTION 02318.
3. TRENCH BACKFILL SHALL MEET THE SPECIFICATION REQUIREMENTS OF SECTION 02318.
4. LEAN CONCRETE SHALL MEET THE SPECIFICATION REQUIREMENTS OF SECTION 03307.
5. GUARDRAIL SHALL BE INSTALLED FROM STA 54+11 TO APPROXIMATELY STA 64+97. GUARD RAIL SHALL CONFORM TO HDOT STANDARD DETAIL R-23.
6. FUTURE CLEANING OF THE CHANNEL WILL REQUIRE LIFTING EQUIPMENT INTO CHANNEL WITH A MOBILE CRANE.
7. ALL TRENCH EXCAVATIONS SHALL FOLLOW THE OSHA REQUIREMENTS OF 29 CFR PART 1926. SHORING, BRACING OR SHEETING MAY BE REQIRED TO MEET OSHA REQUIREMENTS DEPENDING UPON THE SUBSURFACE CONDITIONS ENCOUNTERED, REQUIRED TRENCH DEPTHS AND ACCESS BENCH WIDTH CONSTRAINTS.
8. THE ALTERNATIVE EXCAVATION SHALL ALLOW FOR FUTURE PLACEMENT OF BERM MATERIAL TO RESTORE THE TIE-IN ELEVATION POINT OF THE FUTURE LANDFILL TOE.

WASTE MANAGEMENT

Oakland • California GEI Consultants

WILLIAM A. RETTBERG — LICENSED PROFESSIONAL ENGINEER — No. 12473-C — HAWAII, U.S.A.
DATE: 01-13-10

REV.	DESCRIPTION	BY	APP.	DATE
0	ISSUED FOR CONSTRUCTION			01-13-10

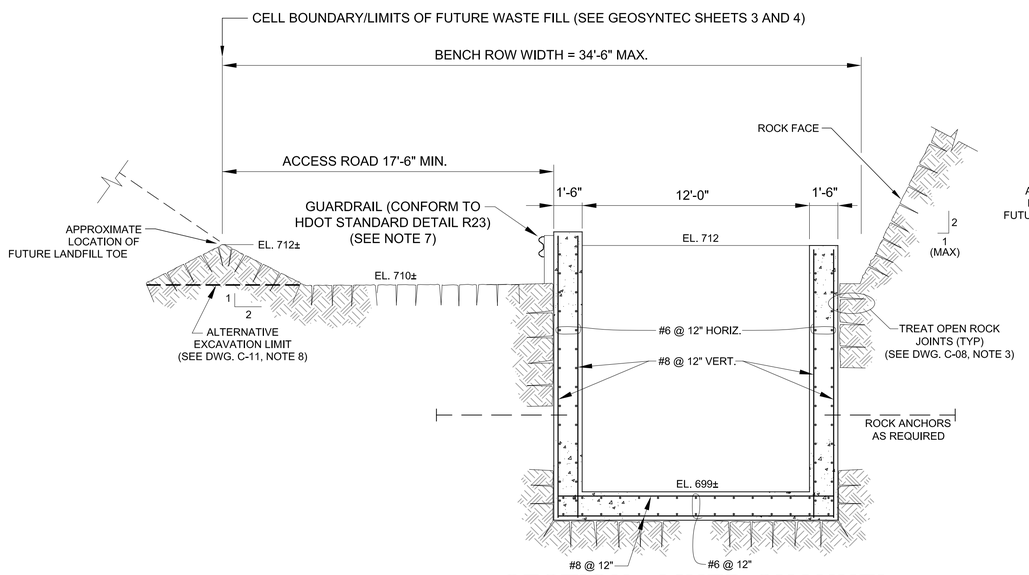
DESIGNED BY:	A. TLABAR
CHECKED BY:	C. ANDERSON
DRAWN BY:	P. MORRISON
CAD FILE NAME:	C-11.dwg
PROJECT NO. 07018-1	SCALE: AS SHOWN

WAIMANALO GULCH LANDFILL
WESTERN SURFACE WATER DRAINAGE PROJECT
EWA BEACH, OAHU, HAWAII

TYPICAL SECTIONS
(SHEET 1 OF 2)

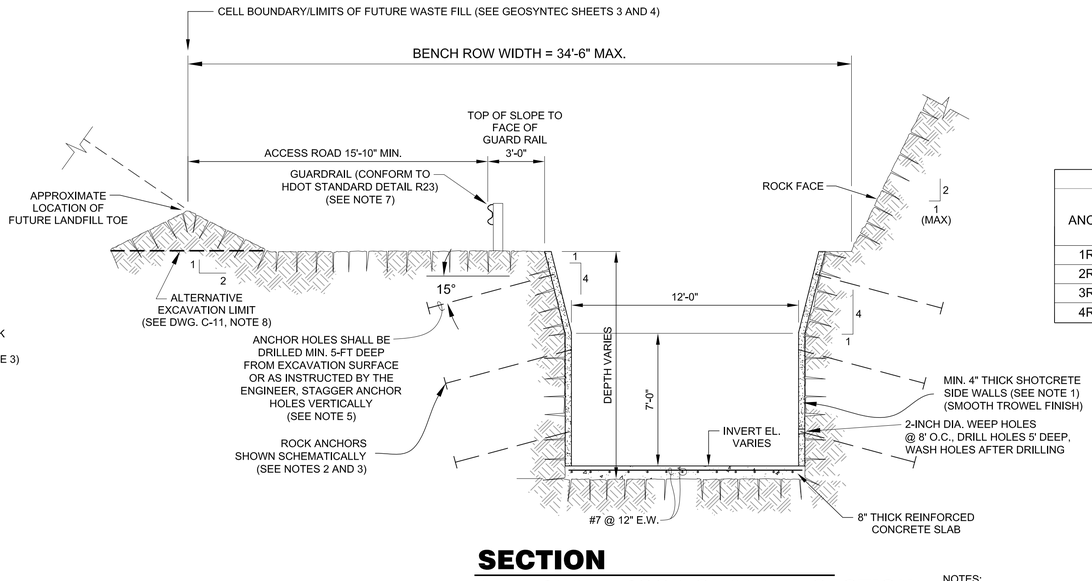
DATE: 01/13/10
DRAWING NO.
C-11

C-11 12-21-09 PYM



SECTION - LINED CHANNEL

STA 64+37 TO STA 64+97



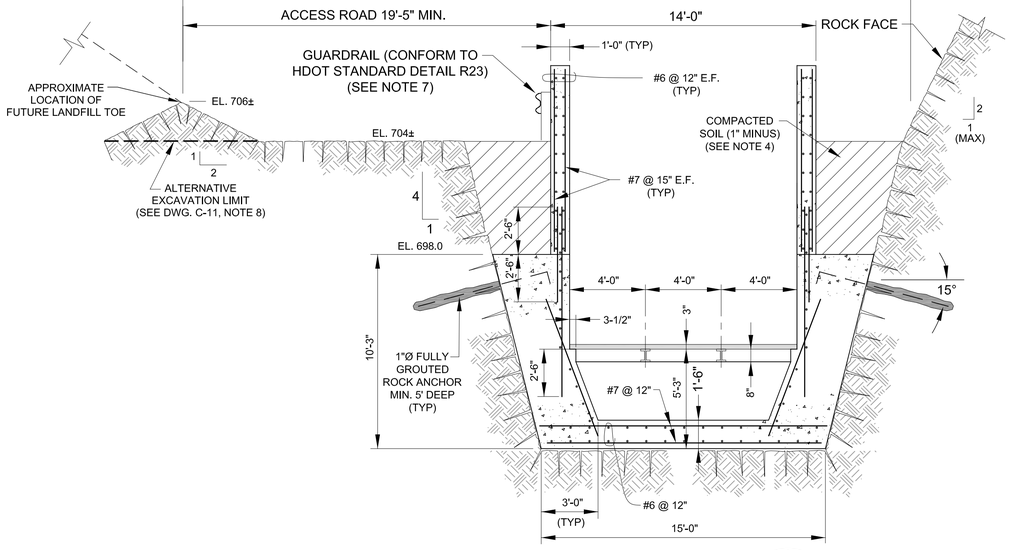
SECTION

ALTERNATE ROCK CHANNEL SECTION
FOR USE IN HIGHLY WEATHERED, WEAK ROCK
STA 54+13 TO STA 64+37

ANCHOR SCHEDULE		
ANCHOR	LENGTH (FT)	CENTER TO CENTER SPACING (FT)
1R/1L	20	5
2R/2L	16	5
3R/3L	12	5
4R/4L	8	5

NOTES:

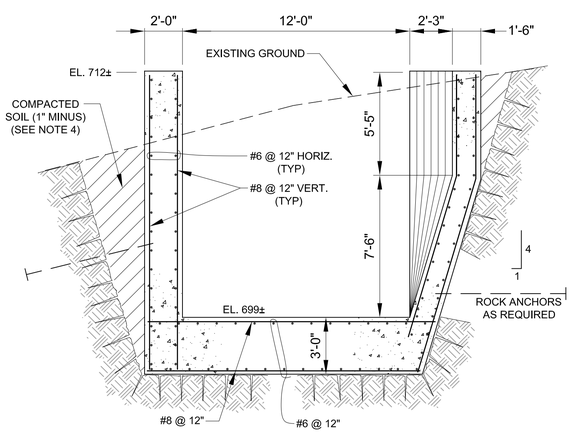
1. PROVIDE SHOTCRETE SLOPE PROTECTION AND ROCK ANCHOR SUPPORT TO SECURE AND STABILIZE HIGHLY WEATHERED, WEAK ROCK FACES IN CHANNEL EXCAVATIONS BASED ON ANCHOR SCHEDULE ABOVE, AND AS DIRECTED BY THE ENGINEER.
2. GLOBAL SLOPE STABILITY IS NOT ADDRESSED BY THE SHOTCRETE ALONE AND ANCHORS SHOWN AND SHALL BE EVALUATED AND ADDRESSED BY THE ENGINEER BASED ON LOCATION-SPECIFIC CONDITIONS EXPOSED DURING CONSTRUCTION.
3. INSTALL MINIMUM 2-INCH INCH DIAMETER DRILL HOLES FOR ROCK ANCHORS USING CEMENTITIOUS GROUT. PROVIDE STABLE DRILL HOLE AND FLUSH WITH WATER TO REMOVE LOOSE MATERIAL.
4. REFER TO SPECIFICATION SECTION 02249 FOR COMPACTED SOIL (1" MINUS) REQUIREMENTS.
5. LIMIT MAXIMUM LENGTH OF ANCHOR SO THAT THE ANCHOR DOES NOT EXTEND BEYOND THE CELL BOUNDARY/LIMITS OF FUTURE WASTE FILL.
6. ROW AND BENCH WIDTH DIMENSIONS ARE APPROXIMATE.
7. DURING PLACEMENT OF LINER SYSTEM TERMINATION ON BENCH, GUARDRAIL SHALL BE RAISED TO ACCOMMODATE FUTURE CUSHION AND OPERATIONS SOIL LAYER.



SECTION - ROCK TRAP

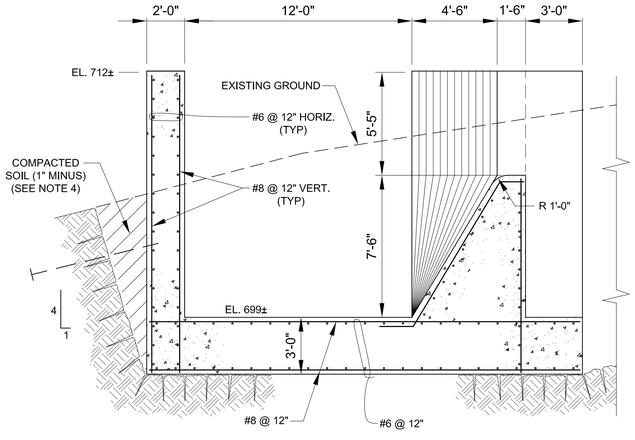
STA 53+68 TO STA 54+13

C
C-09



SECTION - DIVERSION STRUCTURE

MIDDLE OF TRANSITION
STA 65+07



SECTION - DIVERSION STRUCTURE

AT INTAKE POINT
STA 66+17

0 4 8
SCALE, FEET

WASTE MANAGEMENT

Oakland California
GEI Consultants

WILLIAM A. RETTBERG LICENSED PROFESSIONAL ENGINEER No. 12473-C HAWAII, U.S.A.
DATE: 01-13-10

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DESIGNED BY:	A. TLABAR
CHECKED BY:	C. ANDERSON
DRAWN BY:	P. MORRISON
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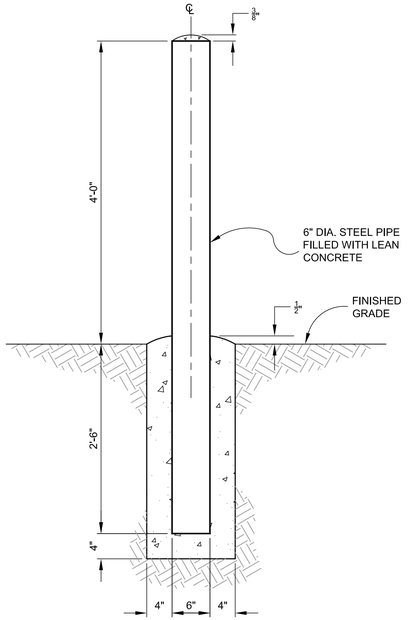
PROJECT NO. 07018-1	SCALE: AS SHOWN

WAIMANALO GULCH LANDFILL
WESTERN SURFACE WATER DRAINAGE PROJECT
EWA BEACH, OAHU, HAWAII

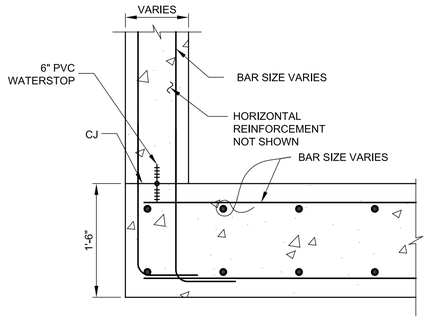
TYPICAL SECTIONS
(SHEET 2 OF 2)

DATE: 01/13/10
DRAWING NO.
C-12

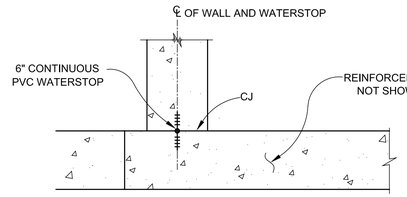
C-12 12/24/09 PYM



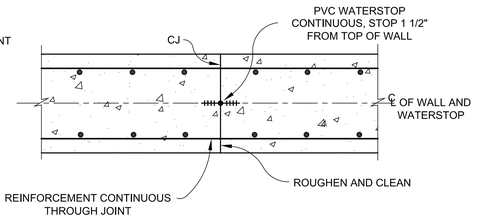
DETAIL
BOLLARD
NOT TO SCALE



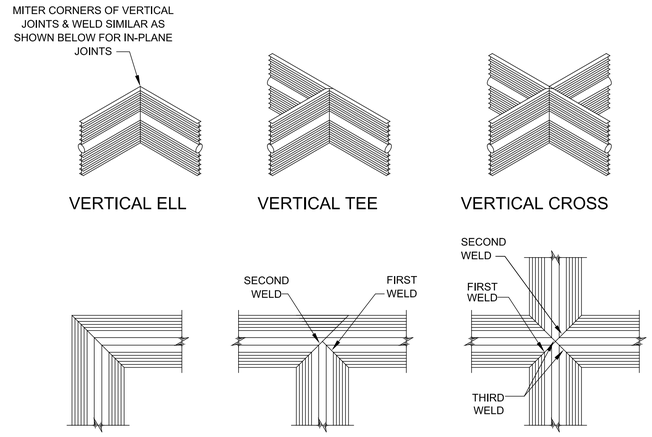
DETAIL
WALL-SLAB CONNECTION
NOT TO SCALE



DETAIL
WALL BASE CONSTRUCTION JOINT
NOT TO SCALE



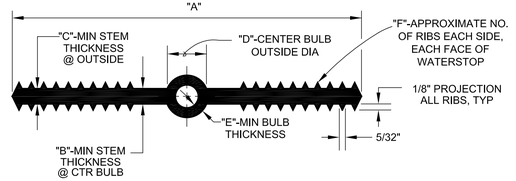
DETAIL
CONSTRUCTION JOINT
NOT TO SCALE



DETAIL
PVC WATERSTOP JOINTS
NOT TO SCALE

NOTE:

ALL WELDS SHALL BE PER WATERSTOP MANUFACTURER'S RECOMMENDATIONS.

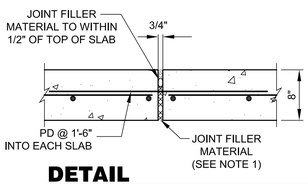


SIZE	"A"	"B"	"C"	"D"	"E"	"F"
6"x3/8"	6"	3/8"	3/8"	7/8"	1/4"	6

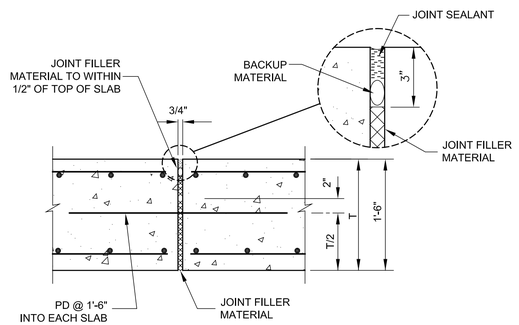
WATERSTOP NOTES:

1. NON-ROUND CENTER BULBS SHALL HAVE A MINIMUM OUTSIDE DIMENSION OF 'D'.
2. BULB TYPE WATERSTOP SHOWN IS REQUIRED FOR EXPANSION AND CONTROL JOINTS. SIMILAR WATERSTOPS WITHOUT CENTER BULB MAY BE SUBSTITUTED AT CONSTRUCTION JOINTS.
3. USE 6 INCH WATERSTOPS IN ALL CONSTRUCTION JOINTS UNLESS SPECIFICALLY SHOWN OTHERWISE.
4. FOR WALLS WITH SINGLE MAT OF REINFORCING LOCATE WATERSTOP ON LIQUID FACE 1" CLEAR OF REINFORCEMENT.

DETAIL
PVC WATERSTOP
NOT TO SCALE



DETAIL
ROCK CHANNEL SLAB EXPANSION JOINT
NOT TO SCALE



DETAIL
RECTANGULAR CHANNEL SLAB EXPANSION JOINT
NOT TO SCALE

NOTE:

1. JOINT FILLER MATERIAL SHALL BE PRE-MOLDED SPONGE RUBBER CONFORMING TO ASTM D 1752.

WASTE MANAGEMENT

Oakland • California GEI Consultants

WILLIAM A. RETTBERG LICENSED PROFESSIONAL ENGINEER No. 12473-C HAWAII, U.S.A.
DATE: 01-13-10

REV.	DESCRIPTION	BY	APP.	DATE
0	ISSUED FOR CONSTRUCTION			01-13-10

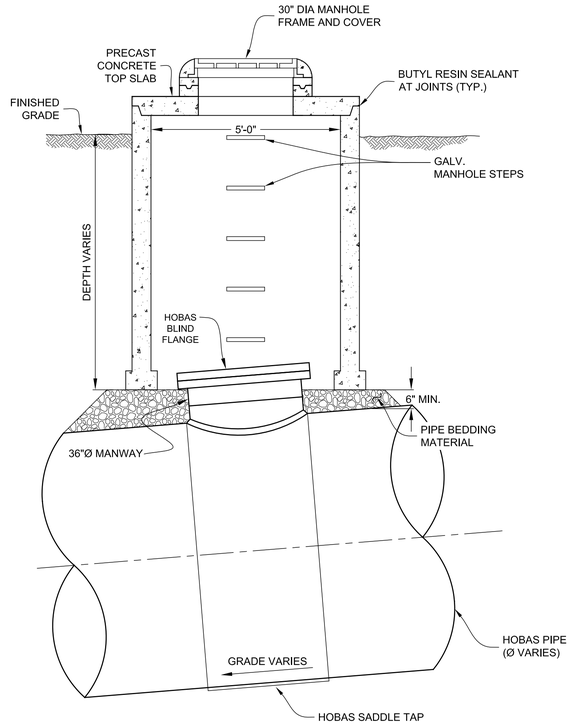
DESIGNED BY:	A. TLABAR
CHECKED BY:	C. ANDERSON
DRAWN BY:	P. MORRISON
CAD FILE NAME:	C-13.dwg
PROJECT NO. 07018-1	SCALE: AS SHOWN

WAIMANALO GULCH LANDFILL
WESTERN SURFACE WATER DRAINAGE PROJECT
EWA BEACH, OAHU, HAWAII

MISCELLANEOUS DETAILS
(SHEET 1 OF 2)

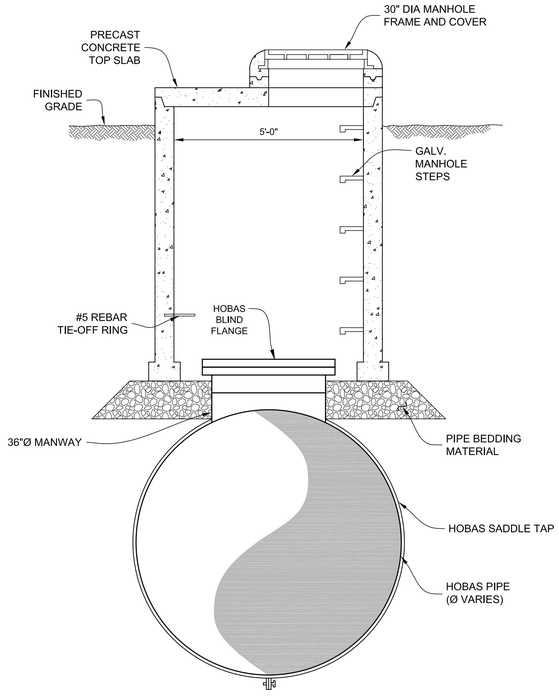
DATE: 01/13/10
DRAWING NO.
C-13

C-13 12/05/09 PYM



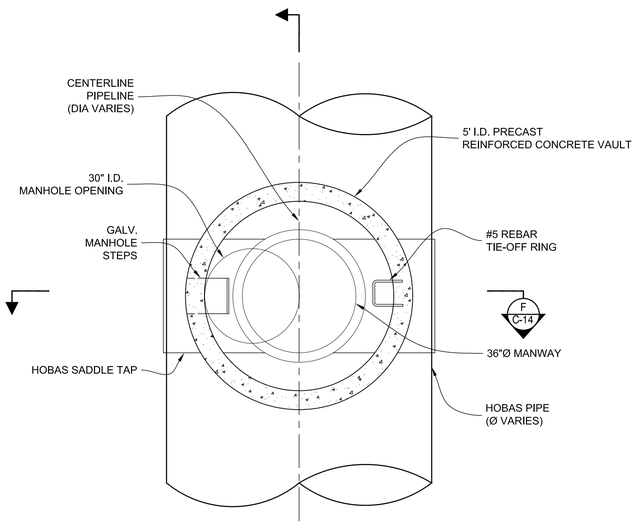
SECTION
INSPECTION MANHOLE
E / C-14

0 1 2 4 6
SCALE IN FEET



SECTION
INSPECTION MANHOLE
F / C-14

0 1 2 4 6
SCALE IN FEET



PLAN
INSPECTION MANHOLE

0 1 2 4 6
SCALE IN FEET

STRUCTURAL NOTES:

1) REINFORCEMENT SYMBOLS

BARS SHOWN THUS #8 @ 1'-0" OR #8 @ 1'-0"

INDICATE A GROUP OF IDENTICAL #8 BARS SPACED AT 1'-0" (12") CENTERS.

AN OPEN CIRCLE AT THE END OF A BAR INDICATES A BEND WITH THE BAR TURNED AWAY FROM THE OBSERVER.

A CLOSED CIRCLE AT THE END OF A BAR INDICATES A BEND WITH THE BAR TURNED TOWARDS THE OBSERVER.

INDICATES A DOWEL

SPLICES SHOWN THUS INDICATE A LAPPED SPLICE, NOT A BEND IN THE BAR.

2) DIMENSIONS

DIMENSIONS ARE TO THE CENTERLINES OF THE BARS UNLESS OTHERWISE SHOWN. CLEAR COVER DIMENSIONS ARE MARKED "CLR." ALL DIMENSIONS TO A JOINT ARE TO THE CENTERLINE OF THE JOINT. BEAMS, COLUMNS, AND WALLS ARE CENTERED ON REFERENCED LINES.

THICKNESS SHOWN FOR WALLS AND SLABS ADJACENT TO UNDISTURBED SOIL OR ROCK ARE MINIMUM DIMENSIONS.

3) COVER

MINIMUM CLEAR CONCRETE PROTECTION (COVER) FOR REINFORCEMENT SHALL BE 3 INCHES UNLESS OTHERWISE NOTED.

4) REINFORCEMENT DOWELS

DOWELS INDICATED ON THE DRAWING SUCH AS #8(D), SHALL HAVE A MINIMUM STRAIGHT EMBEDMENT AND PROJECTION EQUAL TO THAT REQUIRED FOR LAP SPLICING A BAR OF THE SAME DIAMETER.

5) PLAIN DOWELS

PLAIN DOWELS, INDICATED ON THE DRAWINGS SUCH AS 3/4" (P.D.), ACROSS CONTRACTION JOINTS SHALL BE PLAIN REINFORCING BARS OF THE BAR DIAMETER INDICATED. PLAIN DOWELS SHALL BE A MINIMUM OF 36 INCHES LONG, WITH EQUAL LENGTH EXTENDING ON EITHER SIDE OF THE CONTRACTION JOINT. IMMEDIATELY BEFORE THE SECOND CONCRETE PLACEMENT, THE PROJECTING HALF LENGTH OF DOWEL SHALL BE GREASED TO PREVENT BOND TO THE CONCRETE.

6) STANDARD HOOKS AND BENDS

HOOKS AND BENDS SHALL CONFORM TO ACI 318, SECTIONS 7.1, 7.2, AND 7.3.

7) PLACING REINFORCEMENT

PLACE REINFORCEMENT IN ACCORDANCE WITH APPROVED REINFORCEMENT SHOP DRAWINGS. IN THE EVENT OF A CONFLICT BETWEEN THESE DRAWINGS AND THE APPROVED SHOP DRAWINGS, THE APPROVED SHOP DRAWINGS SHALL GOVERN.

SEE ACI 318, SECTION 7.5 AND ACI 301, SECTION 6.3 FOR PLACING TOLERANCES.

REINFORCEMENT MAY BE ADJUSTED IN THE FIELD TO CLEAR FORM TIES AND ANCHOR BARS. IN SUCH CASES, RELOCATION OF THE EMBEDDED MATERIALS MUST BE CONSIDERED. IN NO CASE SHOULD BARS BE BENT IN THE FIELD.

WHERE POSSIBLE, REINFORCEMENT SHALL BE PLACED TO MAINTAIN A CLEAR DISTANCE OF AT LEAST 1 INCH BETWEEN OTHER REINFORCEMENT, ANCHOR BOLTS, FORM TIES, OR OTHER EMBEDDED METALWORK. REINFORCEMENT PARALLEL TO ANCHOR BOLTS OR OTHER EMBEDDED METALWORK SHALL BE PLACED TO MAINTAIN A CLEAR DISTANCE OF AT LEAST 1-1/3 TIMES THE MAXIMUM SIZE AGGREGATE TO BE USED.

8) SPACING

THE FIRST AND LAST BARS IN SLABS AND WALLS, STIRRUPS IN BEAMS, AND TIES IN COLUMNS ARE TO START AND END AT A MAXIMUM OF ONE HALF OF THE ADJACENT BAR SPACING. ALL REINFORCING TO BE EQUALLY SPACED UNLESS OTHERWISE SHOWN ON THE DRAWINGS.

9) ACCESSORIES

BAR SUPPORTS, SPACERS, AND OTHER ACCESSORIES ARE NOT SHOWN ON THE DRAWINGS. THE RECOMMENDATIONS OF ACI 315 (DETAILING MANUAL) SHALL BE USED IN SELECTING ACCESSORIES.

10) DETAILING

UNLESS OTHERWISE SHOWN, FOLLOW THE RECOMMENDATIONS OF ACI 315. NO CHANGES SHALL BE MADE WITHOUT PRIOR APPROVAL.

11) CONCRETE PLACEMENT

BEFORE PLACING CONCRETE, CHECK ALL APPLICABLE DRAWINGS RELEASED AS SUITABLE FOR CONSTRUCTION INCLUDING MANUFACTURER'S DRAWINGS TO VERIFY THE PRESENCE OF ALL EMBEDDED MATERIAL REQUIRED IN THE PLACEMENT.

12) EMBEDMENT AND LAP SPLICE LENGTH REQUIREMENTS

EMBEDMENT LENGTHS AND LAP SPLICE LENGTHS ARE SHOWN IN THE TABLE BELOW.

BASIC EMBEDMENT LENGTHS ARE BASED ON ACI 318, SECTION 12.2.

ALL LAP SPLICE LENGTHS SHOWN ARE CLASS B SPLICES BASED ON ACI 318, SECTION 12.15.

UNLESS OTHERWISE SHOWN ON THE DRAWINGS, THE MINIMUM LENGTHS FOR EMBEDMENT AND LAP SPLICES FOR PARALLEL BARS SHALL BE AS GIVEN IN THE TABLE BELOW.

WHEN REINFORCING BARS OF DIFFERENT SIZE ARE TO BE SPLICED, THE LENGTH OF THE LAP SHALL BE GOVERNED BY THE SMALLER DIAMETER BAR.

SPLICES ARE TO BE MADE SO THAT THE GIVEN CLEAR DISTANCES TO THE FACE OF CONCRETE WILL BE MAINTAINED.

TABLE OF BASIC EMBEDMENT AND LAP SPLICE LENGTHS ACCORDING TO ACI 318

BAR SIZE NO.	EMBEDMENT (INCHES)	LAP SPLICE (INCHES)	
		ALL BARS EXCEPT TOP BARS	TOP BARS *
3	14	19	25
4	19	25	33
5	24	31	40
6	28	37	48
7	41	54	70
8	47	61	80
9	53	69	90
10	59	77	100
11	65	84	110

* TOP BARS ARE HORIZONTAL BARS PLACED SO THAT MORE THAN 12 INCHES OF CONCRETE IS CAST IN THE MEMBER BELOW THE BAR.

13) EMBEDDED ITEMS AND OPENINGS

BEFORE PLACING CONCRETE, CONFIRM THAT ALL EMBEDDED ITEMS ARE IN POSITION AND SECURELY FASTENED IN PLACE. ADD ADDITIONAL REINFORCING AROUND OPENINGS AS SHOWN ON DRAWINGS.

14) FINISHING SYMBOLS AND CONCRETE TOLERANCES

FINISHING SYMBOLS HAVE BEEN USED ON THESE DRAWINGS. REFER TO THE CONSTRUCTION SPECIFICATIONS FOR REQUIREMENTS AND CONSTRUCTION TOLERANCES FOR HYDRAULIC STRUCTURES.

F4 U3 SPECIAL FINISH WITH SPECIAL TOLERANCES FOR HIGH VELOCITY WATER FLOW.

FINISH SURFACES FOR ALL CONSTRUCTION AND CONTRACTION JOINTS SHALL BE PROVIDED IN ACCORDANCE WITH THE SPECIFICATIONS. ALL SURFACES REQUIRING AN F4 OR U3 FINISH ARE SHOWN ON THE DRAWINGS.

15) CHAMFER

UNLESS OTHERWISE INDICATED, CHAMFER EDGES OF ALL PERMANENTLY EXPOSED CONCRETE SURFACES WITH A 45 DEGREE BEVEL, 3/4 INCH X 3/4 INCH. CHAMFER STRIP MAY NOT BE SHOWN ON THE DESIGN DRAWINGS.

16) JOINTS

ALL CONSTRUCTION JOINTS, CONTRACTION JOINTS AND EXPANSION JOINTS SHALL B PROVIDED WHERE SHOWN ON THE APPROVED SHOP DRAWINGS. NO OTHER JOINTS SHALL BE INTRODUCED UNLESS APPROVED BY THE ENGINEER BEFORE CONCRETE I PLACED. EXPANSION JOINTS SHALL BE PLACED LONGITUDINALLY AT 40' O.C. UNLESS OTHERWISE SHOWN ON THE DRAWINGS.

17) STRUCTURAL STEEL

17a) GENERAL

FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO CURRENT AISC MANUAL OF STEEL CONSTRUCTION.

17b) BOLTED CONNECTIONS

ANCHOR AND STRUCTURAL BOLTS SHALL BE STRUCTURAL STEEL, ASTM A 325, STRUCTURAL NUTS SHALL BE STRUCTURAL STEEL, ASTM A 563. ALL BOLTED STRUCTURAL CONNECTIONS SHALL CONFORM TO THE AISC SPECIFICATION FOR STRUCTURAL JOINTS. ALL STRUCTURAL BOLTED CONNECTIONS SHALL BE BEARING-TYPE CONNECTIONS.

17c) WELDING

CONFORM TO AWS D1.1. WELDING ELECTRODES FOR PLAIN STRUCTURAL STEEL SHALL BE AWS SERIES E-70. WELDING ELECTRODES FOR GALVANIZED STEEL SHALL BE AWS SERIES E6010 OR E6011.

WASTE MANAGEMENT

Oakland • California GEI Consultants

WILLIAM A. RETTBERG LICENSED PROFESSIONAL ENGINEER No. 12473-C HAWAII, U.S.A.

DATE: 01-13-10

REV.	DESCRIPTION	BY	APP.	DATE
0	ISSUED FOR CONSTRUCTION			01-13-10

DESIGNED BY:	A. TLABAR
CHECKED BY:	C. ANDERSON
DRAWN BY:	P. MORRISON
CAD FILE NAME:	C-14.dwg
PROJECT NO. 07018-1	SCALE: AS SHOWN

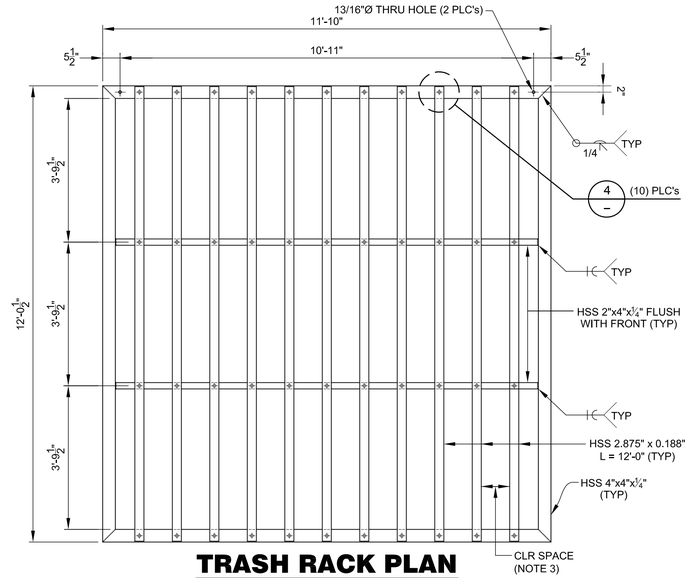
WAIMANALO GULCH LANDFILL
WESTERN SURFACE WATER DRAINAGE PROJECT
EWA BEACH, OAHU, HAWAII

MISCELLANEOUS DETAILS
(SHEET 2 OF 2)
AND CONSTRUCTION NOTES

DATE: 01/13/10

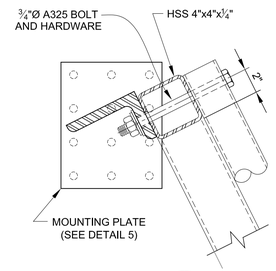
DRAWING NO.
C-14

C-14 12/24/09 PYM



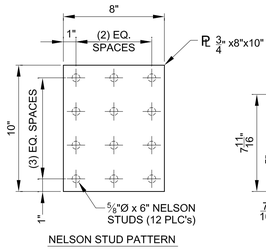
TRASH RACK PLAN
(NOTES 1 & 3)

0 1 2 4
SCALE IN FEET

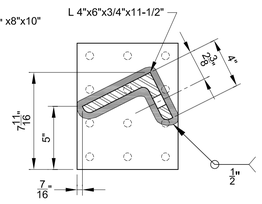


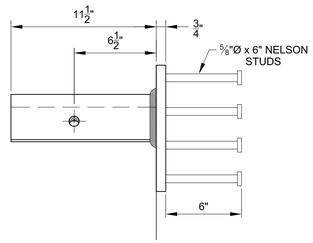
DETAIL 1

0 3 6 12 18
SCALE IN INCHES



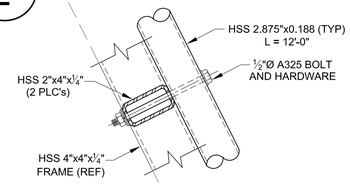
NELSON STUD PATTERN





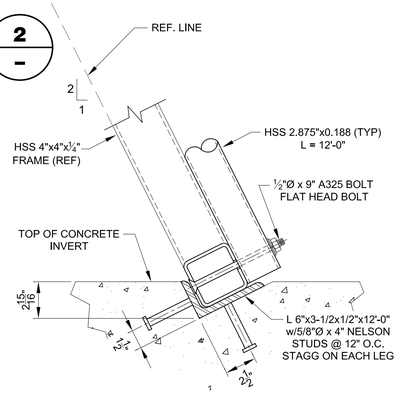
DETAIL MTG PLATE 5
(2) PLC's (1) MIRROR IMAGE

0 3 6 12 18
SCALE IN INCHES



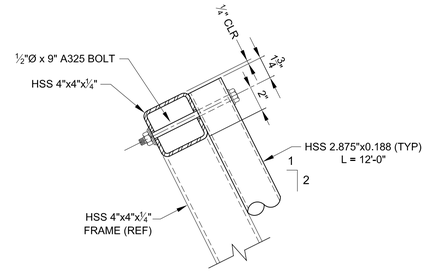
DETAIL 2
(2) PLC's

0 3 6 12 18
SCALE IN INCHES



DETAIL 3

0 3 6 12 18
SCALE IN INCHES



DETAIL 4

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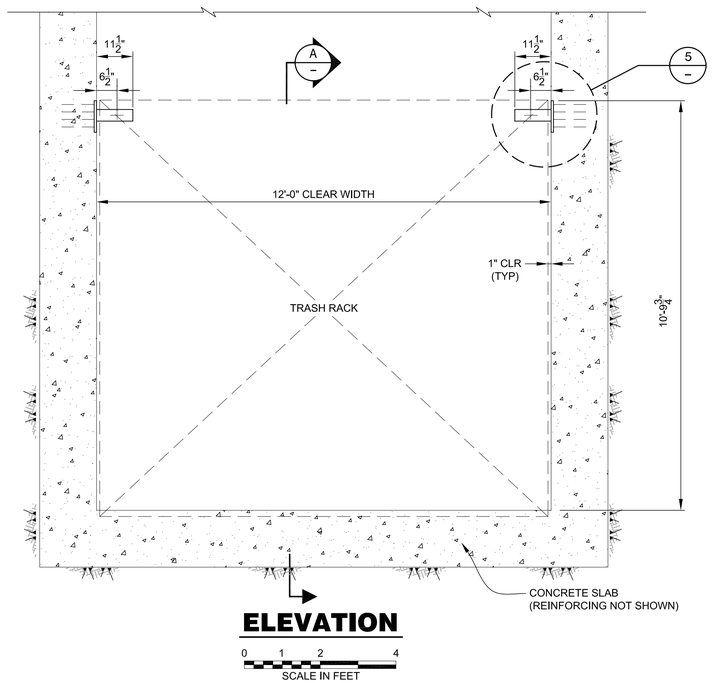
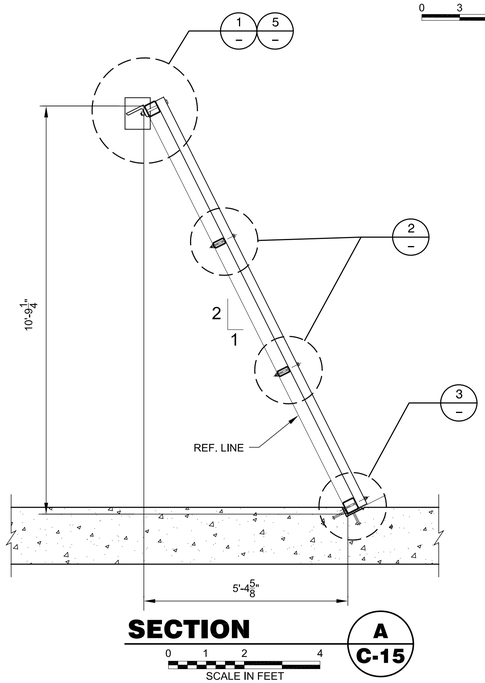
SCALE IN INCHES



ELEVATION

0 1 2 4
SCALE IN FEET



SECTION A
C-15

0 1 2 4
SCALE IN FEET

NOTES:

1. TWO STEEL TRASHRACKS REQUIRED, ONE AT APPROXIMATE STA 53+55 AND ONE AT STA 64+47.
2. BOTH TRASHRACKS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION. STANDARD ROLLED SECTIONS SHALL CONFORM TO ASTM A992. HOLLOW STRUCTURAL SECTIONS SHALL CONFORM TO ASTM A500, GRADE B. STEEL PLATES SHALL CONFORM TO ASTM A36, A706 GRADE 36.
3. CLEAR SPACE BETWEEN BARS SHALL BE 6" ON TRASHRACK NO. 1 (STA. 53+55) AND 9" ON TRASHRACK NO. 2 (STA 64+47).

WASTE MANAGEMENT

Oakland • California GEI Consultants

WILLIAM A. RETTBERG LICENSED PROFESSIONAL ENGINEER No. 12473-C HAWAII, U.S.A.
DATE: 01-13-10

REV.	DESCRIPTION	BY	APP.	DATE
0	ISSUED FOR CONSTRUCTION			01-13-10

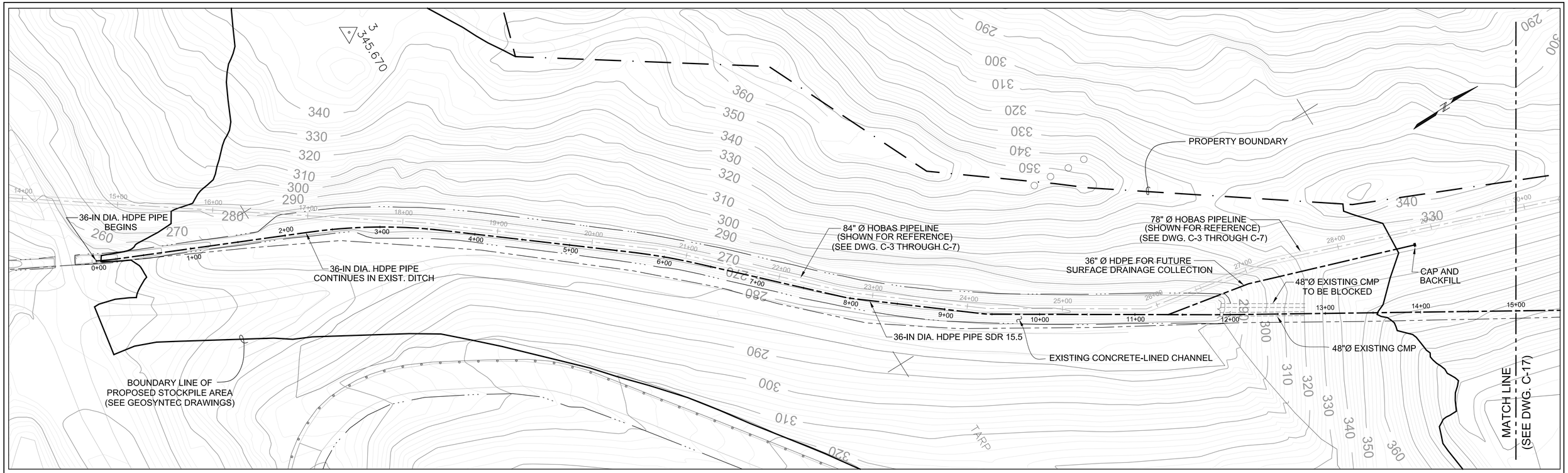
DESIGNED BY:	A. TLABAR
CHECKED BY:	C. ANDERSON
DRAWN BY:	P. MORRISON
CAD FILE NAME:	C-15.dwg
PROJECT NO. 07018-1	SCALE: AS SHOWN

WAIMANALO GULCH LANDFILL
WESTERN SURFACE WATER DRAINAGE PROJECT
EWA BEACH, OAHU, HAWAII

TRASHRACK PLAN, SECTIONS, AND DETAILS

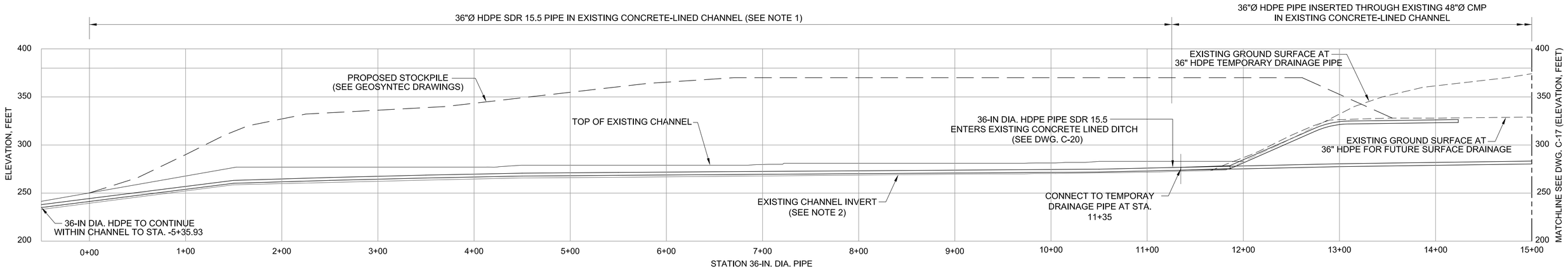
DATE: 01/13/10
DRAWING NO.
C-15

C-15 01/04/10 PYM



NOTES:

1. THE 36-INCH HDPE INVERT LOCATION AND GRADE IS APPROXIMATE AND BASED ON THE ESTIMATED LOCATION OF THE 48-INCH CMP AND ALIGNMENT OF THE EXISTING DRAINAGE CHANNEL. THE DRAINAGE CHANNEL PROFILE IS DEPICTED ON A DESIGN DRAWING BY KWOCK AND ASSOCIATES, 5 OF 20, 11/4/91, FROM THE PLAN SET TITLED, "WAIMANALO GULCH SANITARY LANDFILL, DRAINAGE CHANNEL EXTENSION." THE CONTRACTOR WILL NEED TO CONFIRM THE 36-INCH HDPE INVERT LOCATION AND GRADE SHOWN BASED ON FIELD SURVEYS OF THE 48-INCH CMP AND EXISTING CONCRETE-LINED CHANNEL.
2. PIPE INVERT SHALL CONFORM TO THE EXISTING CHANNEL INVERT GRADES AND TO SECTION "B" ON DWG. C-20 AND 36-INCH HDPE PIPE SECTION ON DWG. C-11.



SCALE, FEET

WASTE MANAGEMENT

Oakland California GEI Consultants

WILLIAM A. RETTBERG LICENSED PROFESSIONAL ENGINEER No. 12473-C HAWAII, U.S.A.

DATE: 04-12-10

REV.	DESCRIPTION	BY	APP.	DATE
1	ISSUED FOR CONSTRUCTION			04-12-10
0	ISSUED FOR CONSTRUCTION			01-13-10

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CHECKED BY:	C. ANDERSON
DRAWN BY:	P. MORRISON
CAD FILE NAME:	C-16.dwg
PROJECT NO. 07018-1	SCALE: AS SHOWN

WAIMANALO GULCH LANDFILL
WESTERN SURFACE WATER DRAINAGE PROJECT
EWA BEACH, OAHU, HAWAII

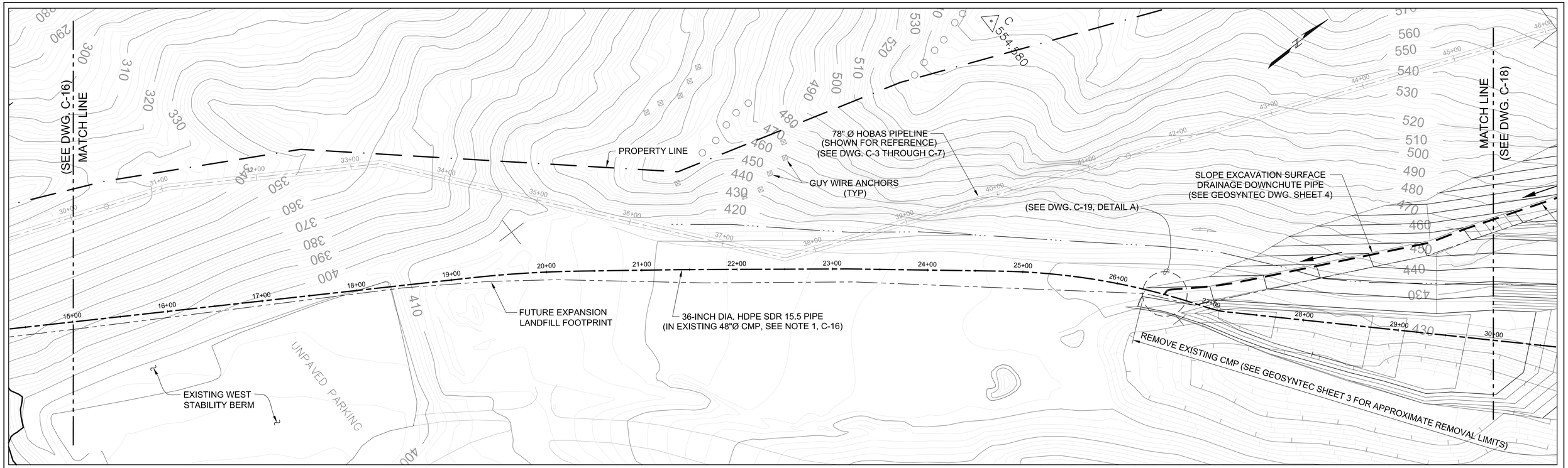
PLAN AND PROFILE
TEMPORARY DRAINAGE
STA. 0+00 TO STA. 15+00

DATE: 04-12-10

DRAWING NO.

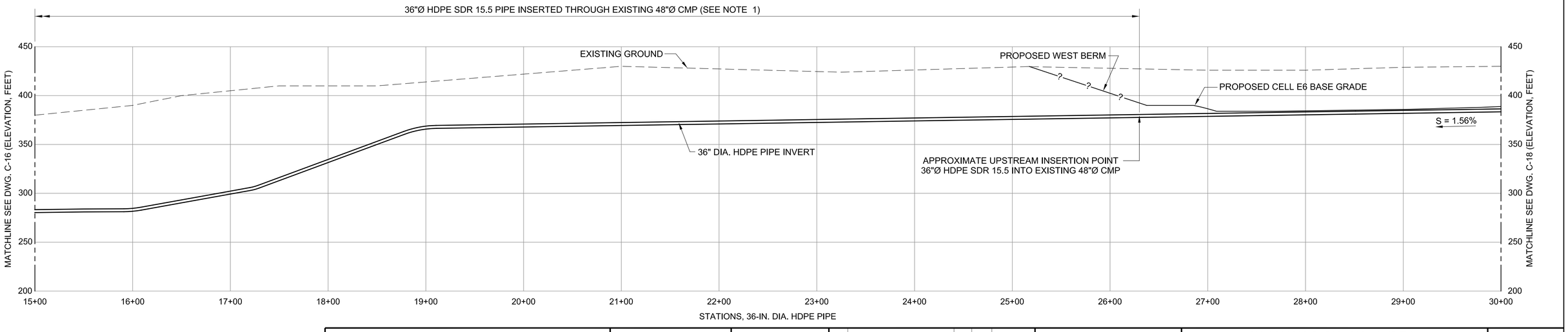
C-16

C-16 04/12/10 PYM



NOTES:

1. THE 36-INCH HDPE INVERT LOCATION AND GRADE IS APPROXIMATE AND BASED ON THE ESTIMATED LOCATION OF THE 48-INCH CMP AND ALIGNMENT OF THE EXISTING DRAINAGE CHANNEL. THE DRAINAGE CHANNEL PROFILE IS DEPICTED ON A DESIGN DRAWING BY KWOCK AND ASSOCIATES, 5 OF 20, 11/4/91, FROM THE PLAN SET TITLED, "WAIMANALO GULCH SANITARY LANDFILL, DRAINAGE CHANNEL EXTENSION." THE CONTRACTOR WILL NEED TO CONFIRM THE 36-INCH HDPE INVERT LOCATION AND GRADE SHOWN BASED ON FIELD SURVEYS OF THE 48-INCH CMP AND EXISTING CONCRETE-LINED CHANNEL.
2. REFER TO GEOSYNTEC DRAWING SHEET NO. 3 FOR CELL E6 GRADING
3. REFER TO GEOSYNTEC SHEET 3 FOR PROPOSED CELL E6 BASE GRADES.



SCALE, FEET

WASTE MANAGEMENT

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DRAWN BY:	P. MORRISON
CAD FILE NAME:	C-17.dwg
PROJECT NO. 07018-1	SCALE: AS SHOWN

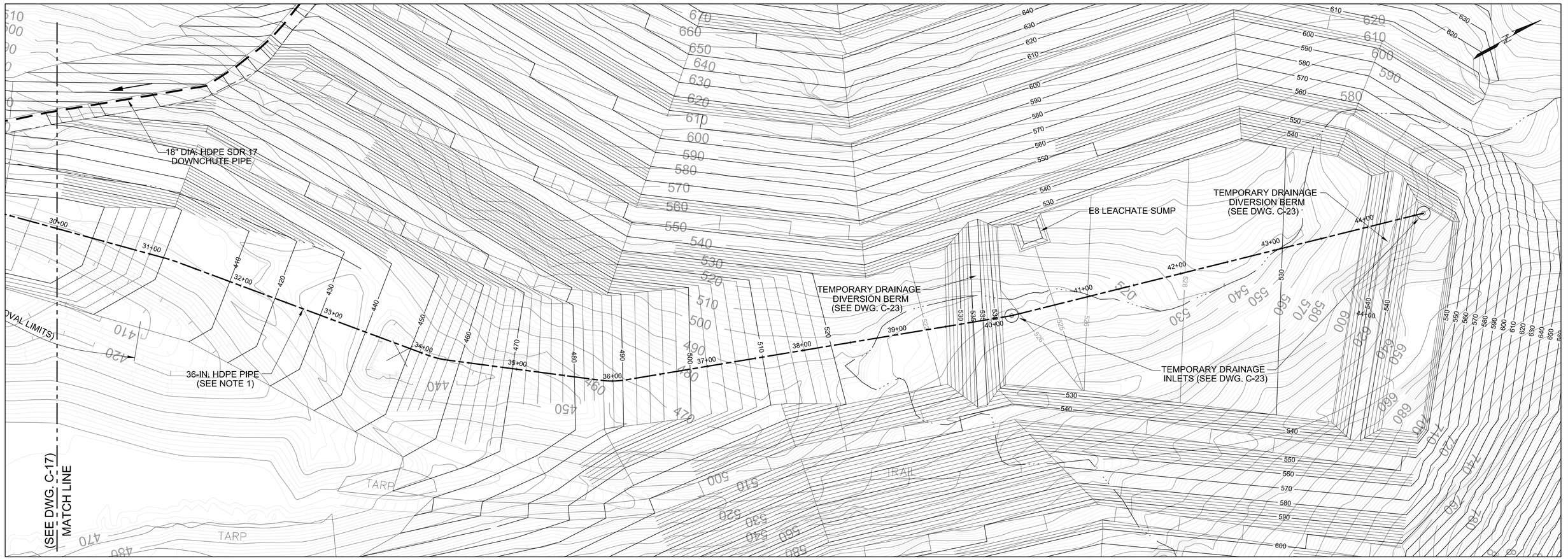
WAIMANALO GULCH LANDFILL
WESTERN SURFACE WATER DRAINAGE PROJECT
EWA BEACH, OAHU, HAWAII

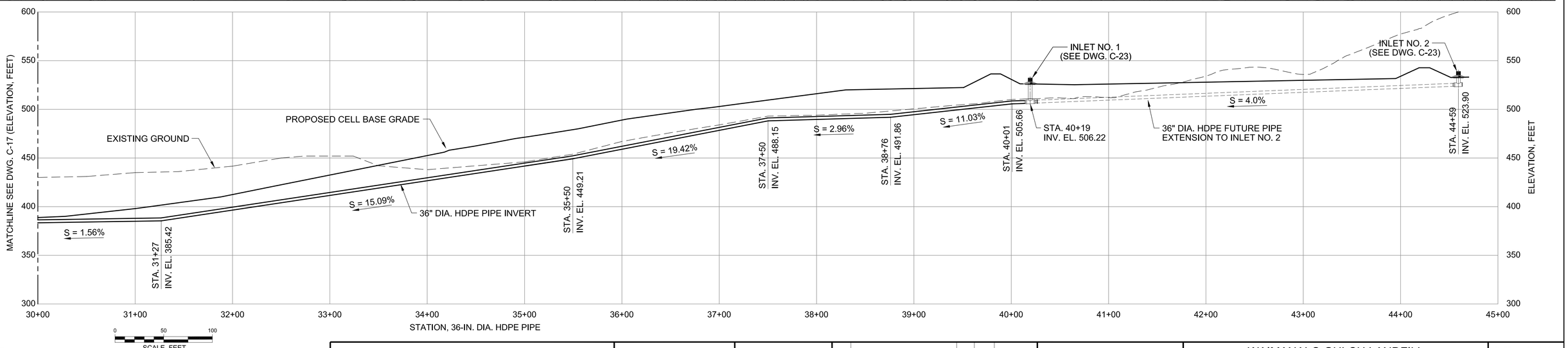
PLAN AND PROFILE
TEMPORARY DRAINAGE
STA. 15+00 TO STA. 30+00

DATE: 01/13/10

DRAWING NO.
C-17

C-17 01/12/10 PYM





NOTE:

1. THE LOCATION OF THE 36-INCH HDPE PIPE SHOWN IN THE AREA OF CELLS E5 AND E6 MAY NEED TO BE FIELD-ADJUSTED DURING CONSTRUCTION BASED ON THE ACTUAL LOCATION OF THE 48-INCH CMP. CONTRACTOR SHALL SUBMIT / CONFIRM FINAL LOCATION/LAYOUT WITH THE ENGINEER.
2. LOCATION OF INLET MAY BE FIELD ADJUSTED TO MINIMIZE EXCAVATION IN INLET AREA.

WASTE MANAGEMENT

Oakland
California
GEI Consultants

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LICENSED PROFESSIONAL ENGINEER
No. 12473-C
HAWAII, U.S.A.
DATE: 01-13-10

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0	ISSUED FOR CONSTRUCTION			01-13-10

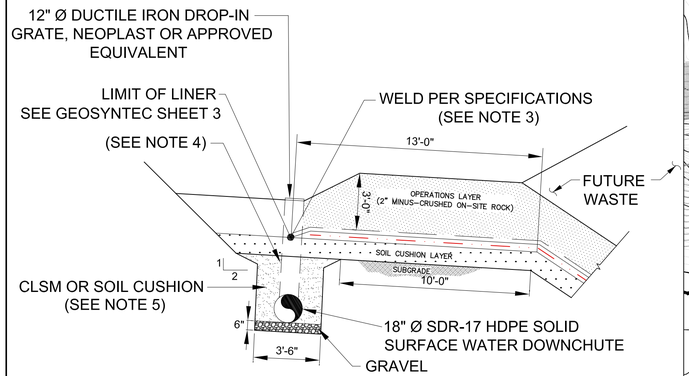
DESIGNED BY:	A. TLABAR
CHECKED BY:	C. ANDERSON
DRAWN BY:	P. MORRISON
CAD FILE NAME:	C-18.dwg
PROJECT NO. 07018-1	SCALE: AS SHOWN

WAIMANALO GULCH LANDFILL
WESTERN SURFACE WATER DRAINAGE PROJECT
EWA BEACH, OAHU, HAWAII

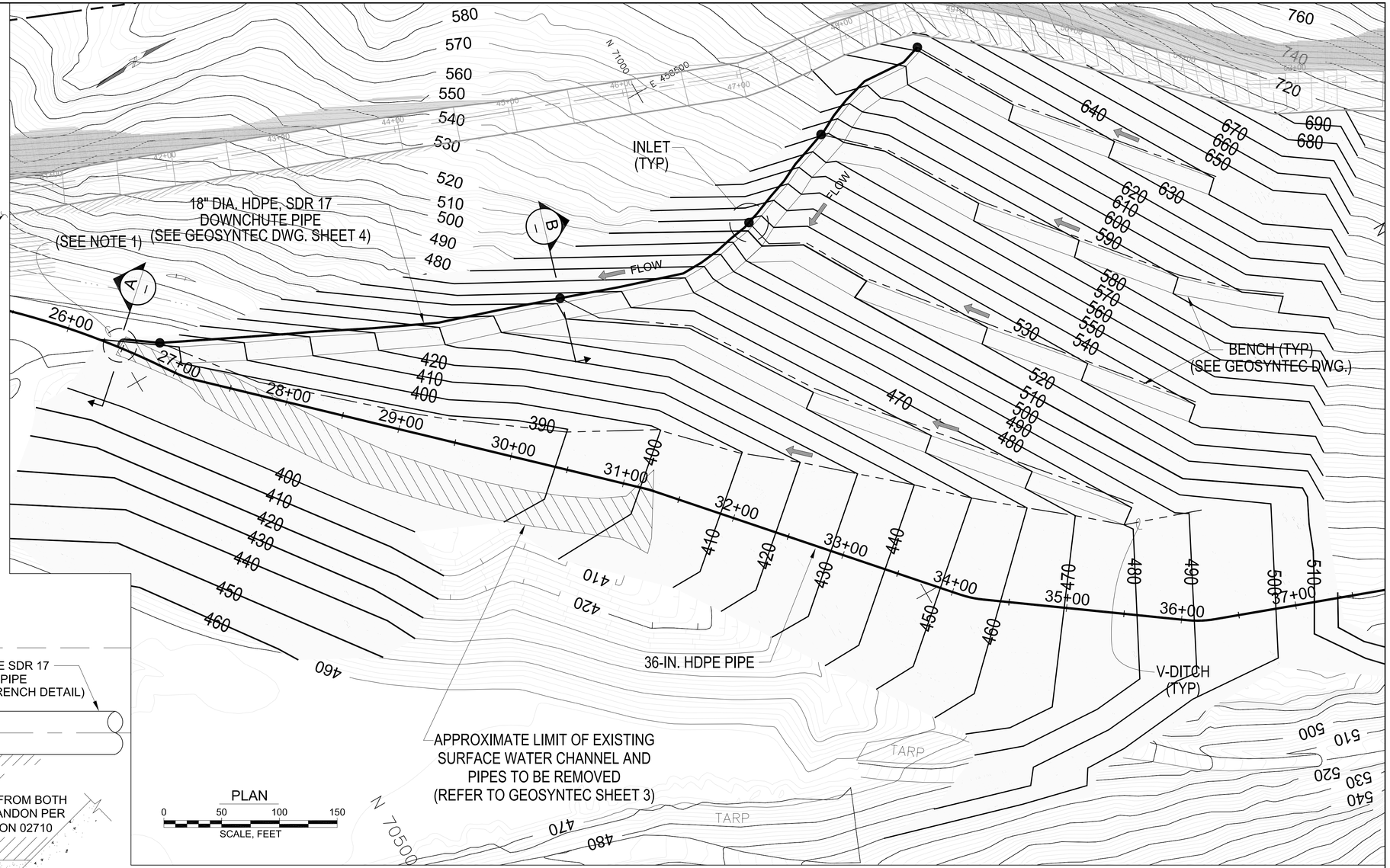
PLAN AND PROFILE
TEMPORARY DRAINAGE
STA. 30+00 TO STA. 45+00

DATE: 01/13/10
DRAWING NO.
C-18

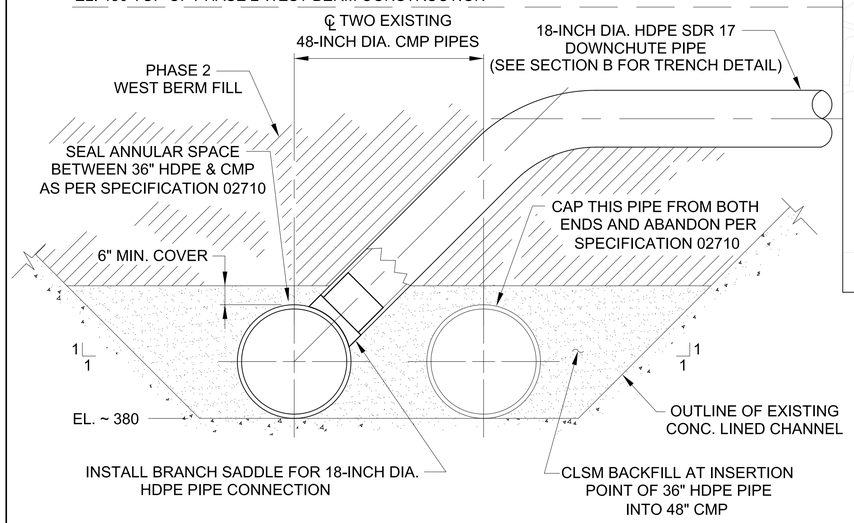
C-18 01/13/10 PYM



SECTION - INLET B



PLAN



SECTION - INLET DOWNCHUTE CONNECTION A

NOTE:
ELEVATIONS ARE APPROXIMATE, FIELD VERIFY PRIOR TO CONSTRUCTION.

0 2 4
SCALE, FEET

NOTES:

1. IN THIS AREA, CONTRACTOR SHALL PERFORM GRADING AS NECESSARY TO ALLOW FOR EQUIPMENT ACCESS DURING HDPE PIPE INSERTION INTO EXISTING 48" DIA. CMP. ALL TEMPORARY SLOPES SHALL BE EXCAVATED IN ACCORDANCE WITH OSHA 29 CFR PART 1926 REQUIREMENTS.
2. REFER TO GEOSYNTEC DRAWING SHEET NO. 3 FOR CELL E6 GRADING.
3. AT LOCATION OF INLET GRATE, CONTRACTOR SHALL PENETRATE THE ENCAPSULATED LINER SYSTEM. AT THESE LOCATIONS, ENCAPSULATED LINER SYSTEM SHALL BE RE-ESTABLISHED AFTER INLET IS CONSTRUCTED BY WELDING OR RESEALING PENETRATION OF GEOSYNTHETICS SO GCL DOES NOT BECOME HYDRATED.
4. TO ACCOMMODATE ENCAPSULATED LINER SYSTEM TERMINATION, LOCATION OF 12-INCH DIAMETER DOWNCHUTE RISER AND GRATE MAY BE MOVED. ENCAPSULATION NEEDS TO BE RE-ESTABLISHED (BY WELDING OR RE-SEALING PENETRATION OF GEOSYNTHETICS SO GCL DOES NOT BECOME HYDRATED) BASED ON FINAL LOCATION OF RISER AND GRATE.
5. PIPE SOIL BACKFILL SHALL BE SOIL CUSHION MATERIAL (SEE SECTION 02249) OR CONTROLLED LOW STRENGTH MATERIAL (CLSM). MATERIAL AND CONSTRUCTION METHODS FOR CLSM SHALL MEET A MINIMUM STRENGTH OF 150 PSI, AND OTHER REQUIREMENTS IN HDOT SECTION 314. MEASUREMENT AND PAYMENT FOR CLSM IS INCLUDED AS A PART OF OTHER BID ITEMS; REFER TO SECTION 1025 OF THE CONTRACT DOCUMENTS.

WASTE MANAGEMENT

Oakland California GEI Consultants

WILLIAM A. RETTBERG LICENSED PROFESSIONAL ENGINEER No. 12473-C HAWAII, U.S.A.
DATE: 01-13-10

REV.	DESCRIPTION	BY	APP.	DATE
0	ISSUED FOR CONSTRUCTION			01-13-10

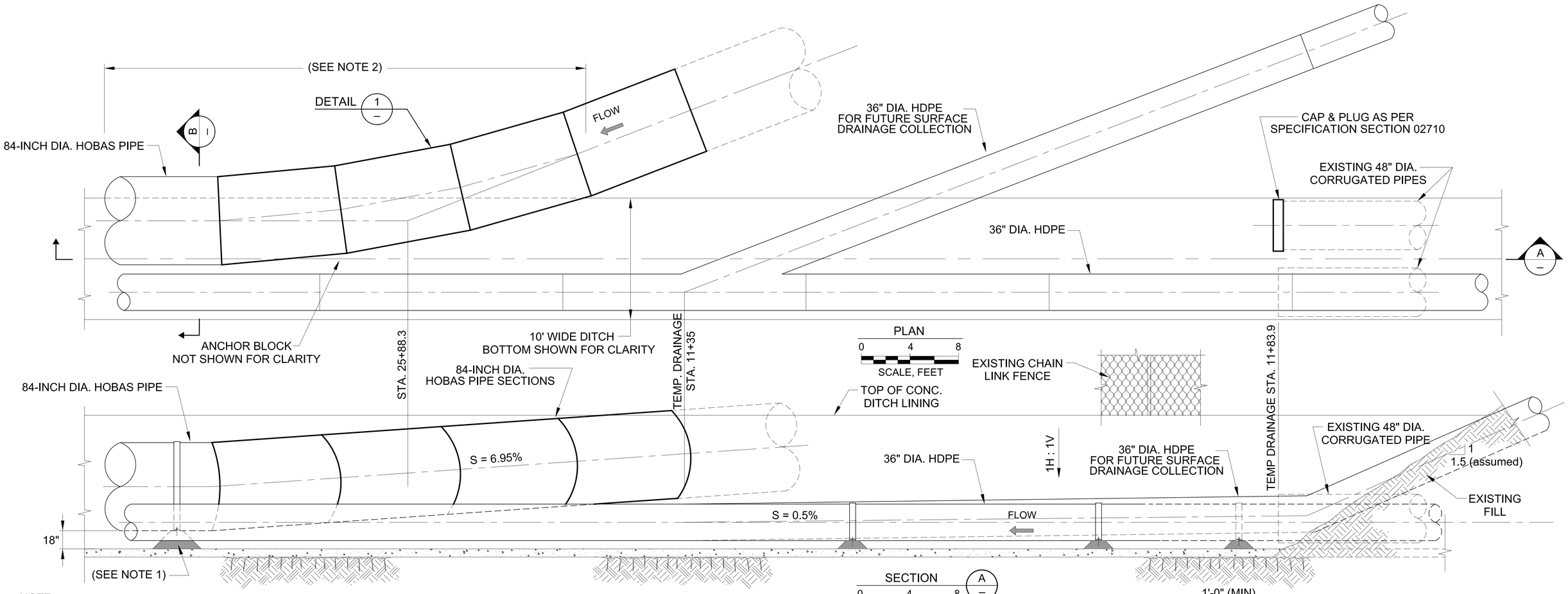
DESIGNED BY:	A. TLABAR
CHECKED BY:	C. ANDERSON
DRAWN BY:	P. MORRISON
CAD FILE NAME:	C-19.dwg
PROJECT NO. 07018-1	SCALE: AS SHOWN

WAIMANALO GULCH LANDFILL
WESTERN SURFACE WATER DRAINAGE PROJECT
EWA BEACH, OAHU, HAWAII

PLAN AND DETAILS
SURFACE DRAINAGE OF EXCAVATION BENCHES

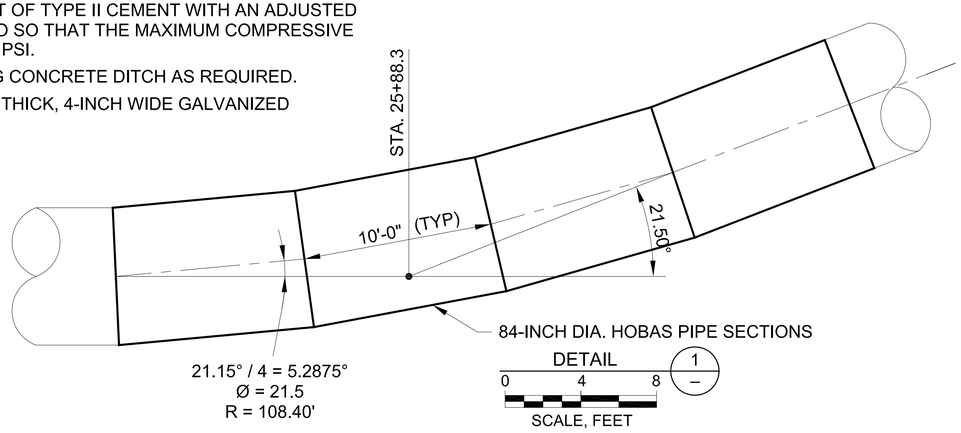
DATE: 01/13/10
DRAWING NO.
C-19

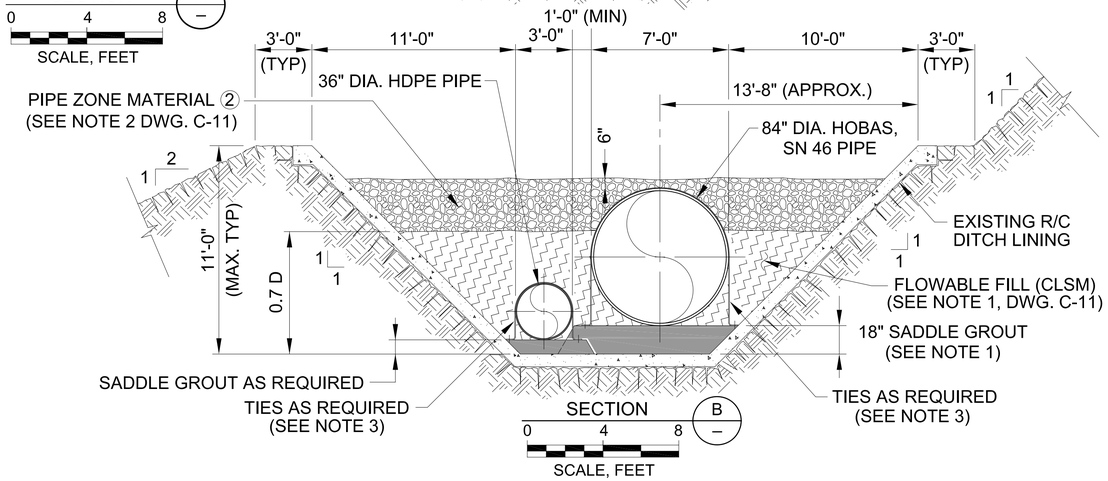
C-19 01/12/10 PYM



NOTE

1. SADDLE GROUT SHOULD CONSIST OF TYPE II CEMENT WITH AN ADJUSTED WATER, SAND AND CEMENT RATIO SO THAT THE MAXIMUM COMPRESSIVE STRENGTH OF THE GROUT IS 100 PSI.
2. CONTRACTOR TO DEMO EXISTING CONCRETE DITCH AS REQUIRED.
3. TIES SHALL CONSIST OF 1/4-INCH THICK, 4-INCH WIDE GALVANIZED STEEL STRAPS.





WASTE MANAGEMENT

Oakland • California GEI Consultants

WILLIAM A. RETTBERG LICENSED PROFESSIONAL ENGINEER No. 12473-C HAWAII, U.S.A.

DATE: 04-12-10

REV.	DESCRIPTION	BY	APP.	DATE
1	ISSUED FOR CONSTRUCTION			04-12-10
0	ISSUED FOR CONSTRUCTION			01-13-10

DESIGNED BY:	A. TLABAR
CHECKED BY:	C. ANDERSON
DRAWN BY:	P. MORRISON
CAD FILE NAME:	C-20.dwg
PROJECT NO. 07018-1	SCALE: AS SHOWN

WAIMANALO GULCH LANDFILL
WESTERN SURFACE WATER DRAINAGE PROJECT
EWA BEACH, OAHU, HAWAII

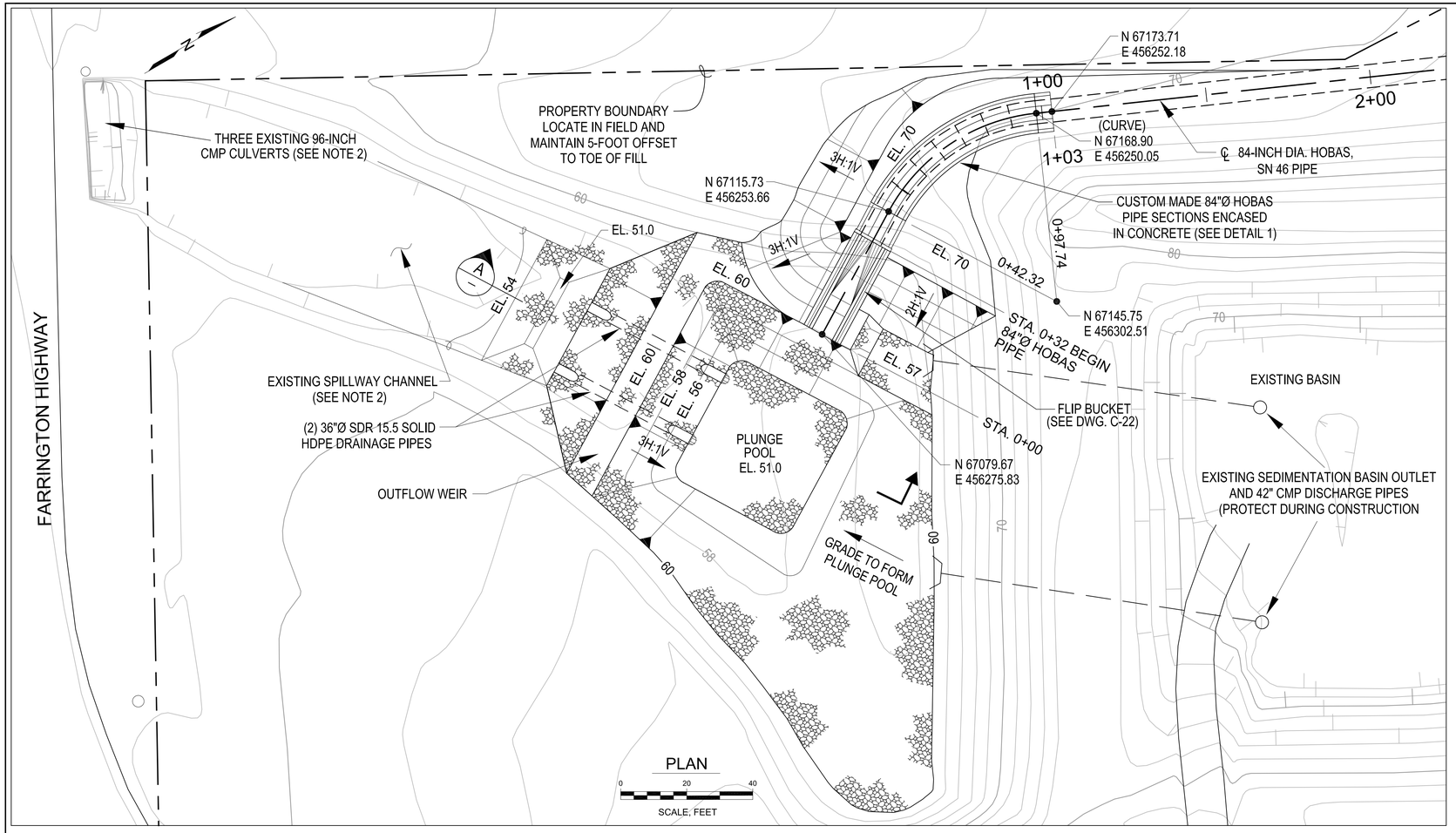
84-INCH AND 36-INCH HDPE DETAILS
IN CONCRETE LINED CHANNEL

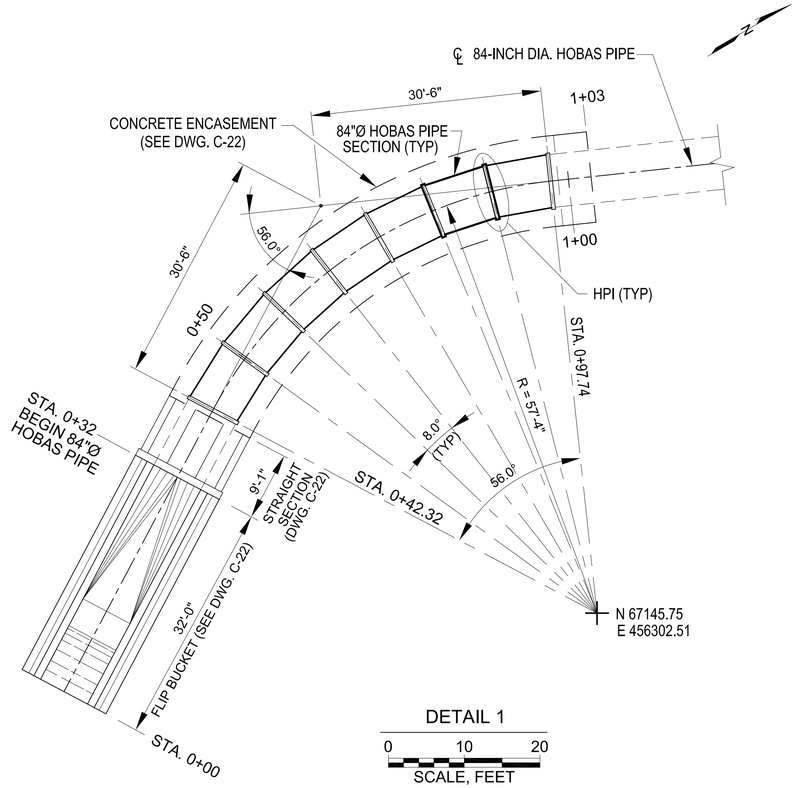
DATE: 04-12-10

DRAWING NO.

C-20

C-20 04/12/10 PYM

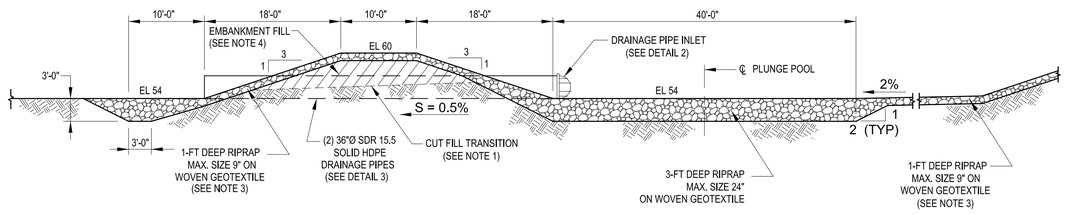




DETAIL 1

0 10 20

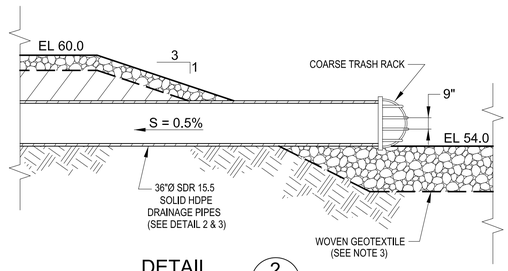
SCALE, FEET



SECTION A

0 10 20

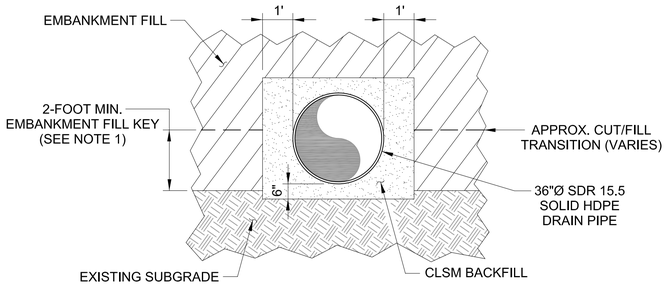
SCALE, FEET



DETAIL 2

DRAINAGE PIPE INLET

SCALE = NONE



DETAIL 3

DRAINAGE PIPE

SCALE = NONE

NOTES

1. KEY EMBANKMENT FILL A MINIMUM OF 2-FEET BELOW TRANSITION, OR AS DIRECTED BY ENGINEER.
2. CONTRACTOR SHALL REMOVE LOOSE VEGETATION, SEDIMENT AND DEBRIS FROM DRAINAGE CHANNEL AND CMP CULVERTS.
3. WOVEN GEOTEXTILE SHALL BE MIRAFI 500X, OR APPROVED EQUAL.

WASTE MANAGEMENT

Oakland • California GEI Consultants

WILLIAM A. RETTBERG LICENSED PROFESSIONAL ENGINEER No. 12473-C HAWAII, U.S.A.

DATE: 01-13-10

REV.	DESCRIPTION	BY	APP.	DATE
0	ISSUED FOR CONSTRUCTION			01-13-10

DESIGNED BY:	A. TLABAR
CHECKED BY:	C. ANDERSON
DRAWN BY:	P. MORRISON
CAD FILE NAME:	C-21.dwg
PROJECT NO. 07018-1	SCALE: AS SHOWN

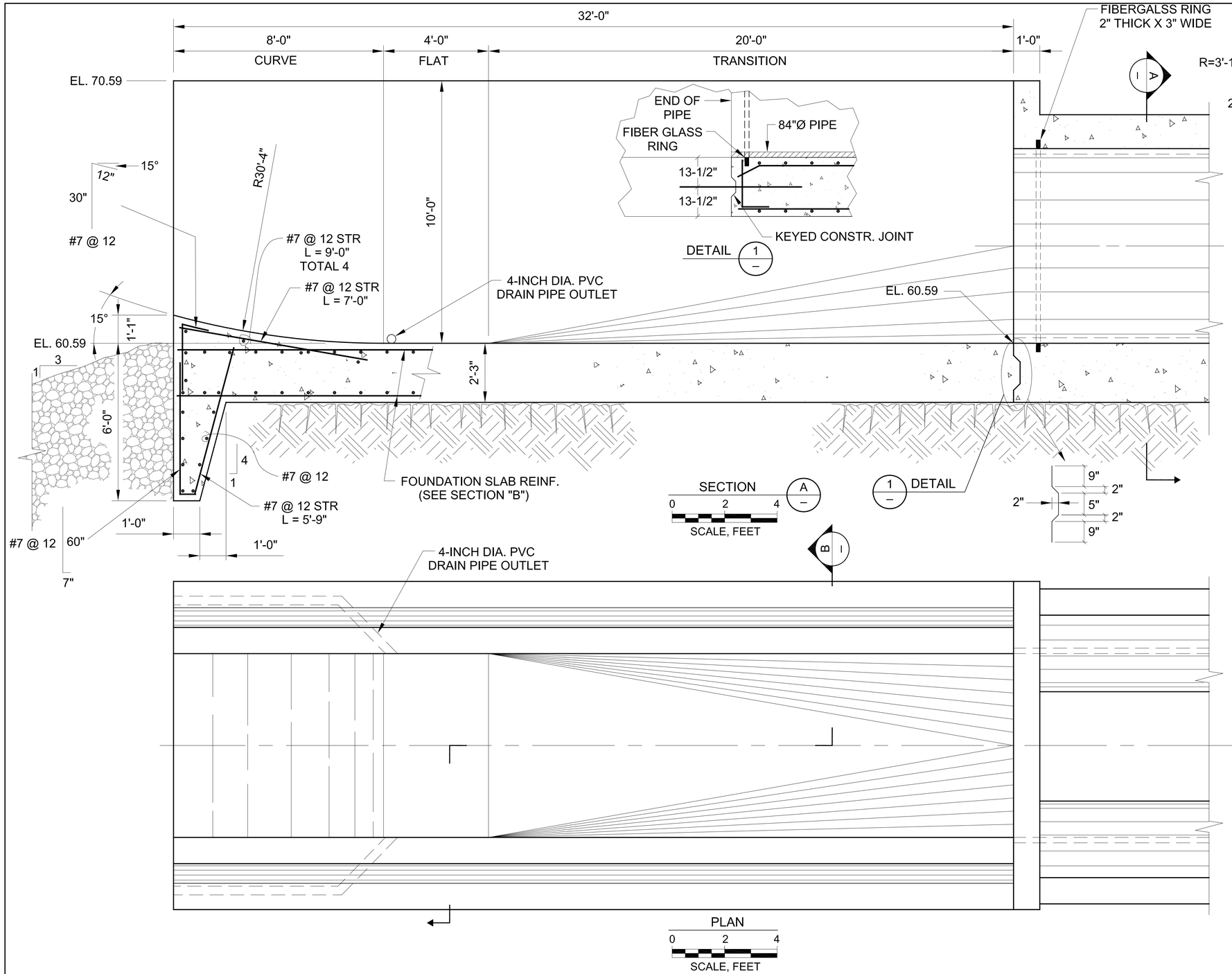
WAIMANALO GULCH LANDFILL
WESTERN SURFACE WATER DRAINAGE PROJECT
EWA BEACH, OAHU, HAWAII

DOWNSTREAM STILLING FACILITIES PLAN AND SECTIONS

DATE: 01/13/10

DRAWING NO. C-21

C-21 12-31-09 PYM



C-22 01/12/10 PYM

WASTE MANAGEMENT

Oakland • California
GEI Consultants

WILLIAM A. RETTBERG
LICENSED PROFESSIONAL ENGINEER
No. 12473-C
HAWAII, U.S.A.
DATE: 01-13-10

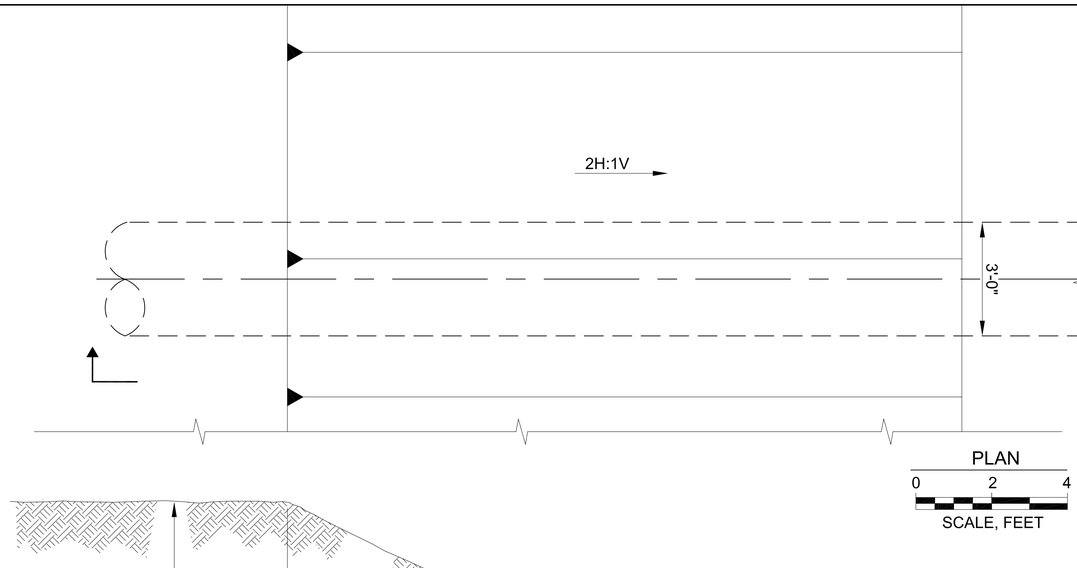
REV.	DESCRIPTION	BY	APP.	DATE
0	ISSUED FOR CONSTRUCTION			01-13-10

DESIGNED BY:	A. TLABAR
CHECKED BY:	C. ANDERSON
DRAWN BY:	P. MORRISON
CAD FILE NAME:	C-22.dwg
PROJECT NO.	07018-1
SCALE:	AS SHOWN

WAIMANALO GULCH LANDFILL
WESTERN SURFACE WATER DRAINAGE PROJECT
EWA BEACH, OAHU, HAWAII

FLIP BUCKET STRUCTURE
PLAN AND SECTIONS

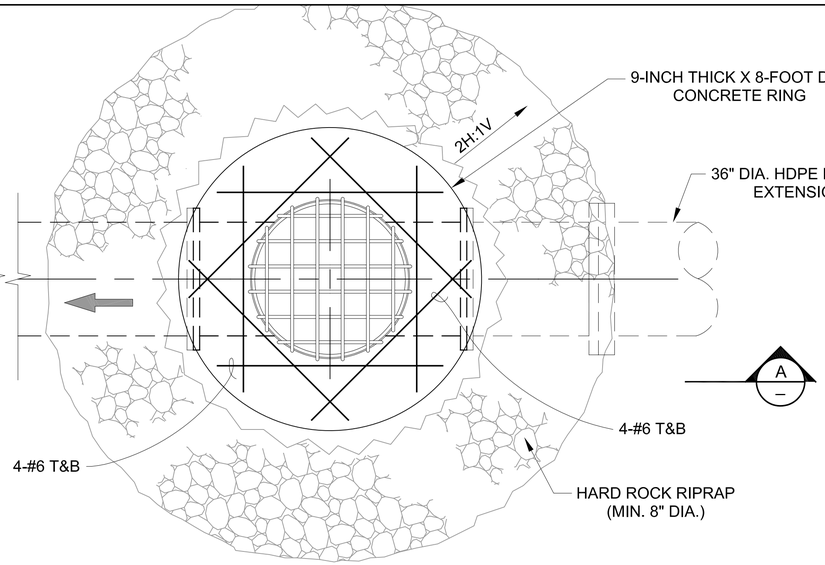
DATE: 01/13/10
DRAWING NO.
C-22

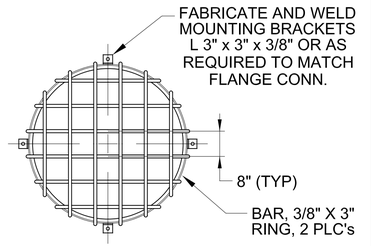


PLAN

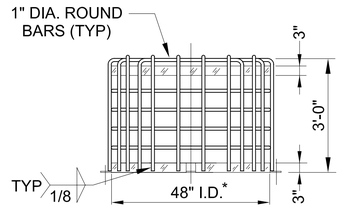
0 2 4

SCALE, FEET





PLAN



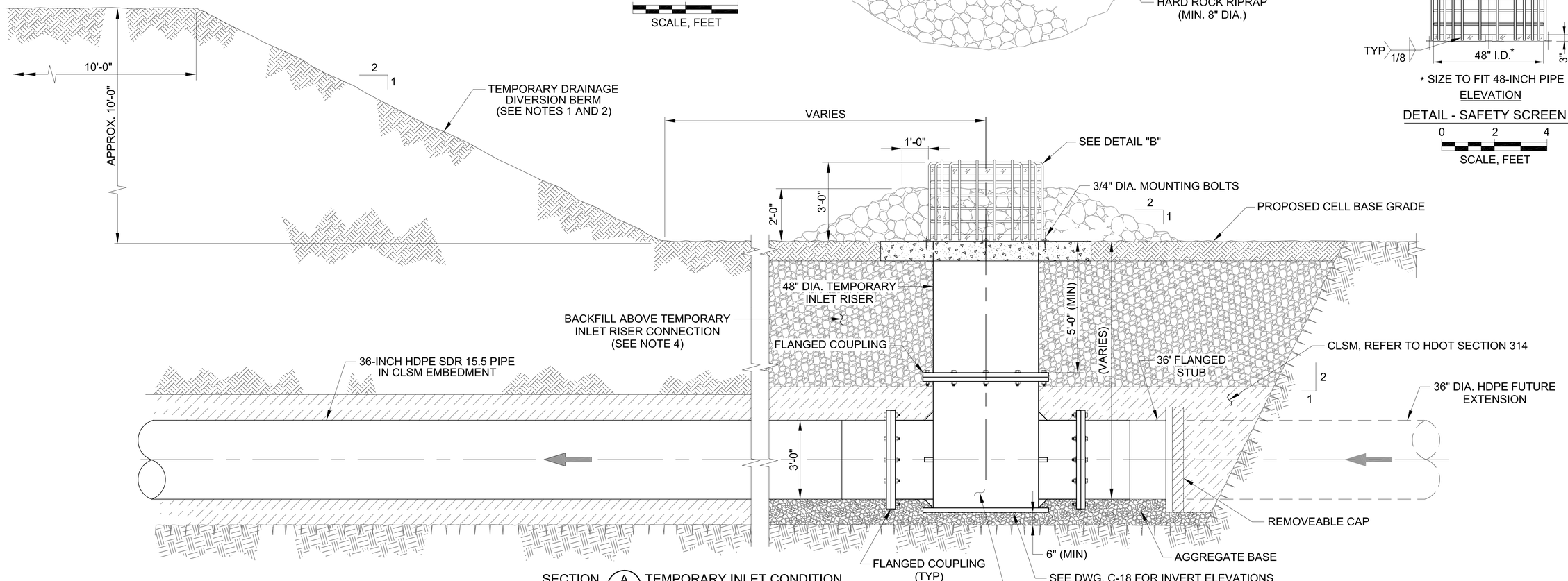
* SIZE TO FIT 48-INCH PIPE

ELEVATION

DETAIL - SAFETY SCREEN (B)

0 2 4

SCALE, FEET



SECTION (A) TEMPORARY INLET CONDITION

0 2 4

SCALE, FEET

NOTES

1. ARMOR BERM CREST, DOWNSTREAM FACE, AND UPPER 3-FEET OF UPSTREAM FACE WITH ROCK OVER A SACRIFICAL GEOTEXTILE.
2. USE COMPACTED SOIL MATERIAL AS PER SPECIFICATION SECTION 02249.
3. ALL METAL SHALL BE PAINTED WITH TWO COATS OF "AMERLOCK 400" AFTER FABRICATION.
4. PIPE BEDDING SHALL MEET THE REQUIREMENTS OF SPECIFICATION SECTION 02318.
5. SEE DRAWING C-24 FOR INLET ABANDONMENT.

WASTE MANAGEMENT

Oakland • California GEI Consultants

WILLIAM A. RETTBERG LICENSED PROFESSIONAL ENGINEER No. 12473-C HAWAII, U.S.A.

DATE: 04/12/10

REV.	DESCRIPTION	BY	APP.	DATE
1	ISSUED FOR CONSTRUCTION			04-12-10
0	ISSUED FOR CONSTRUCTION			01-13-10

DESIGNED BY:	A. TLABAR
CHECKED BY:	C. ANDERSON
DRAWN BY:	P. MORRISON
CAD FILE NAME:	C-23
PROJECT NO. 07018-1	SCALE: AS SHOWN

WAIMANALO GULCH LANDFILL
WESTERN SURFACE WATER DRAINAGE PROJECT
EWA BEACH, OAHU, HAWAII

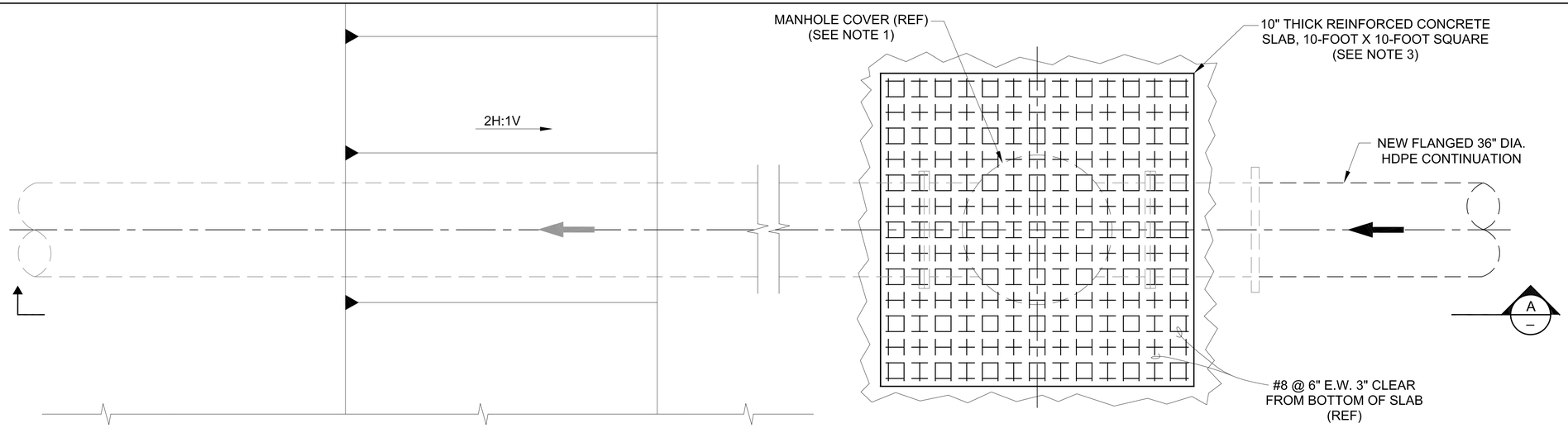
TEMPORARY DRAINAGE DIVERSION BERM AND INLET INSTALLATION

DATE: 04/12/10

DRAWING NO.

C-23

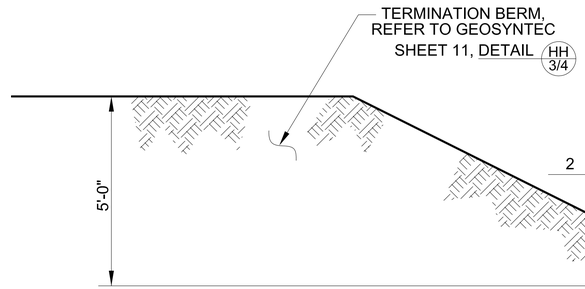
C-23 (REV 1) 04-12-10 PYM

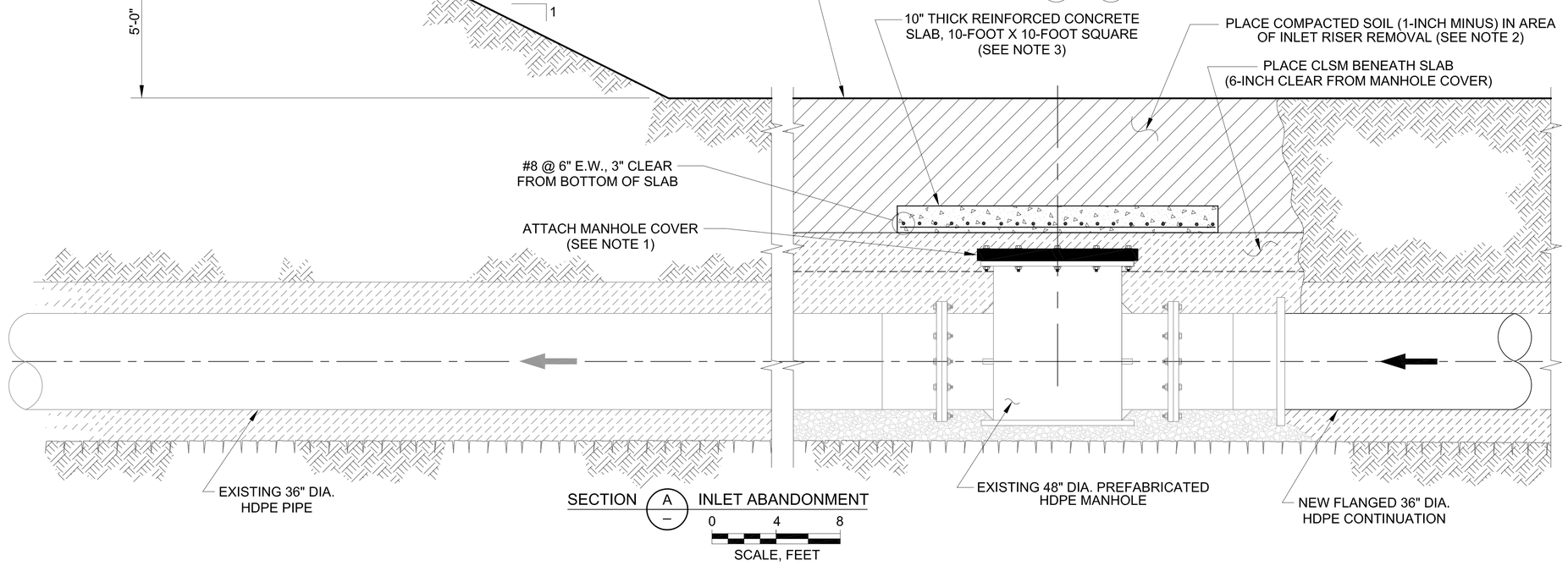


PLAN

0 2 4

SCALE, FEET





SECTION A – INLET ABANDONMENT

0 4 8

SCALE, FEET

NOTES

1. REMOVE TEMPORARY INLET RISER AND REPLACE WITH HDPE MANHOLE COVER BOLTED TO THE FLANGE. THE HDPE MANHOLE COVER SHALL BE RATED FOR A MINIMUM OPERATING PRESSURE OF 10 PSI.
2. REMOVE PIPE BEDDING MATERIAL AND REPLACE WITH COMPACTED SOIL MATERIAL (1-INCH MINUS) MEETING SPECIFICATION REQUIREMENTS OF OF SECTION 02249.
3. SLAB SHALL CONSIST OF STRUCTURAL CONCRETE AND STEEL REIN-FORCEMENT MEETING SPECIFICATION REQUIREMENTS OF SECTION 03307.

WASTE MANAGEMENT

Oakland • California GEI Consultants

WILLIAM A. RETTBERG LICENSED PROFESSIONAL ENGINEER No. 12473-C HAWAII, U.S.A.

DATE: 04/12/10

REV.	DESCRIPTION	BY	APP.	DATE
0	ISSUED FOR CONSTRUCTION			04-12-10

DESIGNED BY:	A. TLABAR
CHECKED BY:	C. ANDERSON
DRAWN BY:	P. MORRISON
CAD FILE NAME:	C-24
PROJECT NO. 07018-1	SCALE: AS SHOWN

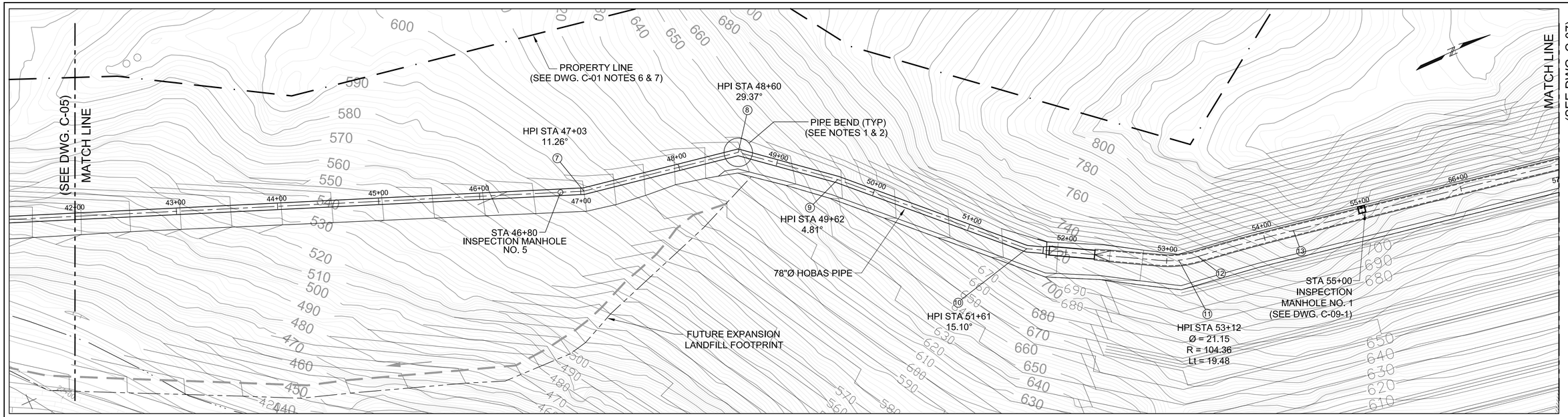
WAIMANALO GULCH LANDFILL
WESTERN SURFACE WATER DRAINAGE PROJECT
EWA BEACH, OAHU, HAWAII

INLET ABANDONMENT

DATE: 04/12/10

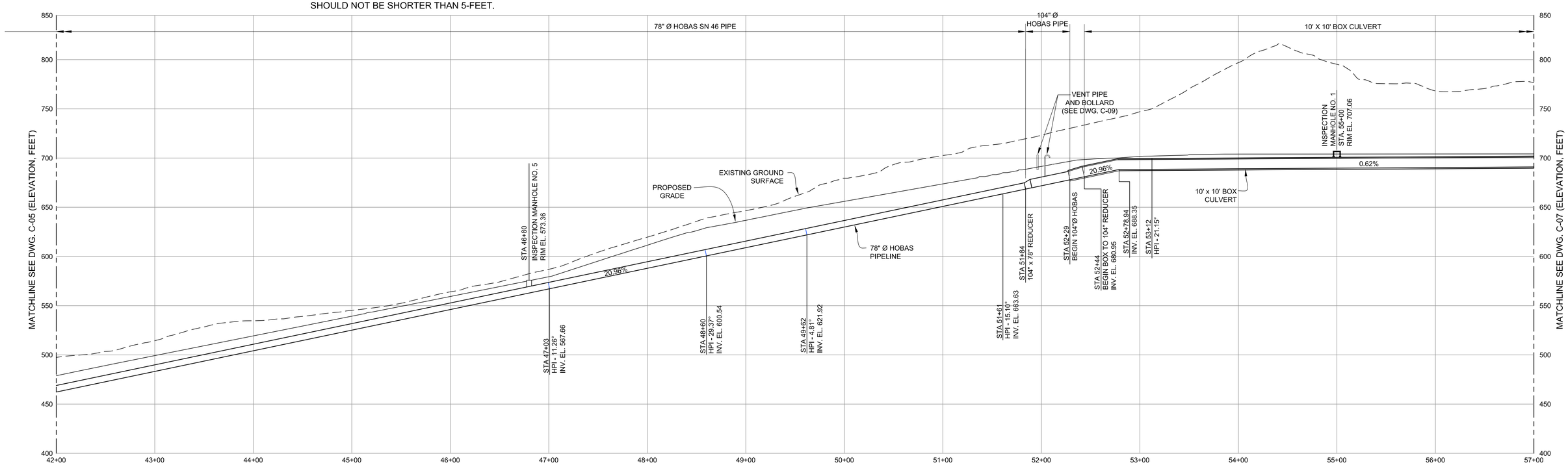
DRAWING NO. C-24

C-24 (REV 1) 04-12-10 PYM



NOTES

1. PIPE DEFLECTION ANGLES OF INDIVIDUAL PIPE SEGMENTS IN ALIGNMENT BENT AREAS SHOULD NOT EXCEED 5 DEGREES, EXCEPT WHERE NOTED ON DRAWINGS. INDIVIDUAL PIPE SEGMENTS SHOULD NOT BE SHORTER THAN 5-FEET.
2. THE CONTRACTOR WILL NEED TO PROVIDE ADEQUATE SPACE IN THE TRENCH FOR LAYING OUT HOBAS PIPE SEGMENTS IN ALIGNMENT BENT AREAS.



0 50 100
SCALE, FEET

WASTE MANAGEMENT

Oakland • California
GEI Consultants

WILLIAM A. RETTBERG
LICENSED PROFESSIONAL ENGINEER
No. 12473-C
HAWAII, U.S.A.
DATE: 00-03-10

REV.	DESCRIPTION	BY	APP.	DATE
0	ADDENDA DRAWINGS			00-03-10

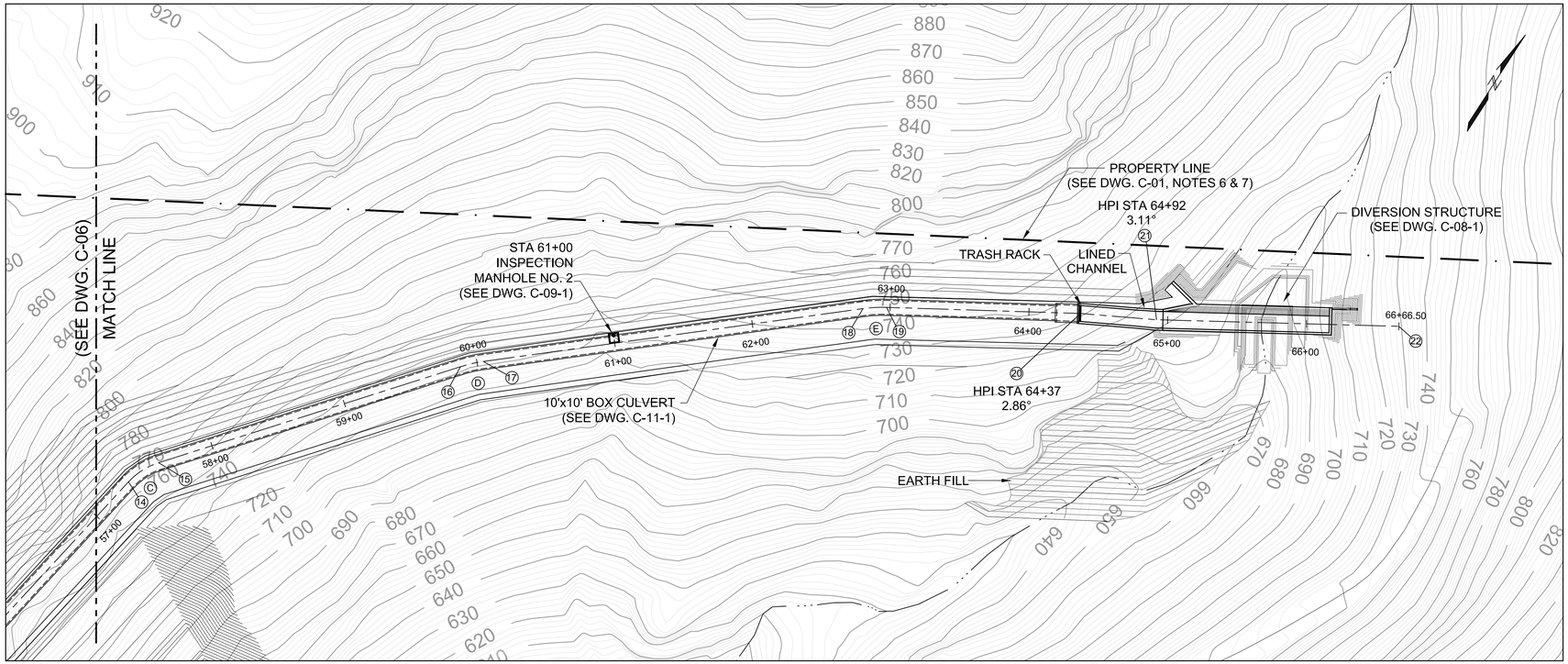
DESIGNED BY:	A. TLABAR
CHECKED BY:	C. ANDERSON
DRAWN BY:	P. EGGERS
CAD FILE NAME:	C-06-1.dwg
PROJECT NO. 07018-1	SCALE: AS SHOWN

WAIMANALO GULCH LANDFILL
WESTERN SURFACE WATER DRAINAGE PROJECT
EWA BEACH, OAHU, HAWAII

PLAN AND PROFILE
PERMANENT DRAINAGE
STA. 42+00 TO STA. 57+00

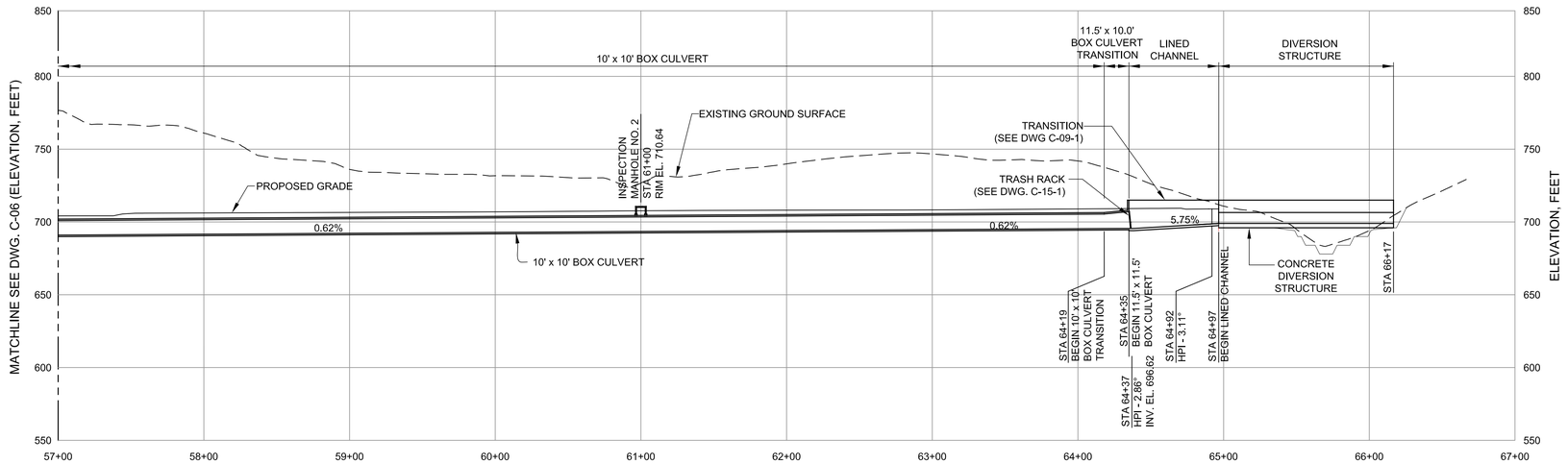
DATE: 00/03/2010
DRAWING NO.
C-06-1

C-06-1 9/23/10 PJE



HORIZONTAL LAYOUT DATA			
POINT NO.	STATION	NORTHING	EASTING
1	8+93.9	67897.27	456571.43
2	25+88.3	69249.64	457587.36
3	27+27.2	69385.98	457613.72
4	31+05.8	69741.90	457742.24
5	33+31.1	69934.84	457859.07
6	37+67.4	70211.44	458196.46
7	47+03.1	71085.56	458530.37
8	48+60.4	71240.61	458556.71
9	49+62.3	71319.78	458620.86
10	51+61.2	71463.29	458758.61
11	53+12.2	71595.68	458831.17
12	53+43.3	71626.55	458835.27
13	54+29.5	71711.70	458848.23
14	57+33.7	72011.59	458899.62
15	57+59.6	72034.89	458910.27
16	59+87.6	72211.04	459055.03
17	60+04.6	72223.16	459066.84
18	62+80.5	72403.74	459275.44
19	62+97.5	72413.73	459289.18
20	64+36.5	72485.63	459408.18
21	64+91.8	72511.80	459456.83
22	66+66.5	72602.80	459605.99

HORIZONTAL CURVE DATA		
CURVE NO.	RADIUS	DELTA
A	57.33'	55°23'04"
B	2300.00'	02°08'45"
C	50.00'	29°49'35"
D	100.00'	09°42'16"
E	100.00'	08°19'40"



0 50 100
SCALE, FEET

WASTE MANAGEMENT

Oakland • California GEI Consultants

WILLIAM A. RETTBERG LICENSED PROFESSIONAL ENGINEER No. 12473-C HAWAII, U.S.A.
DATE: 00-03-10

REV.	DESCRIPTION	BY	APP.	DATE
0	ADDENDA DRAWINGS			00-03-10

DESIGNED BY:	A. TLABAR
CHECKED BY:	C. ANDERSON
DRAWN BY:	P. EGGERS
CAD FILE NAME:	C-07-1.dwg
PROJECT NO. 07018-1	SCALE: AS SHOWN

WAIMANALO GULCH LANDFILL
WESTERN SURFACE WATER DRAINAGE PROJECT
EWA BEACH, OAHU, HAWAII

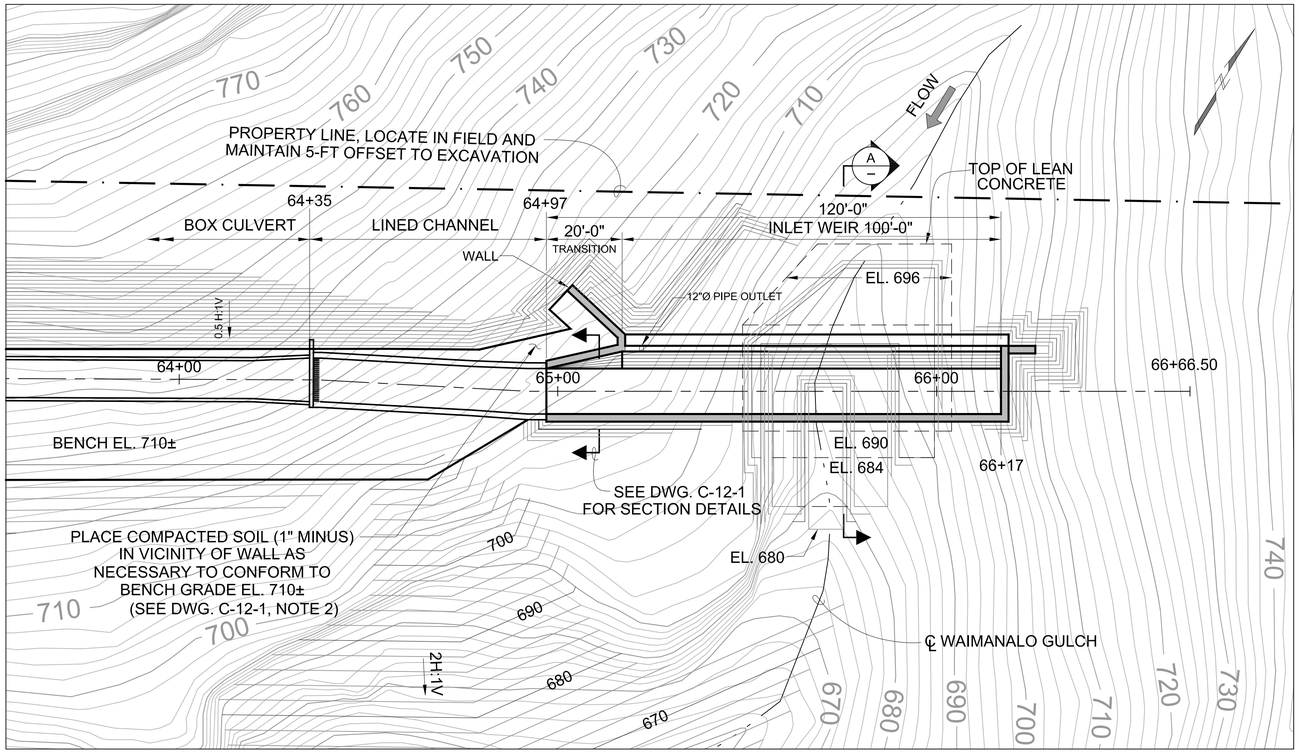
PLAN AND PROFILE
PERMANENT DRAINAGE
STA. 57+00 TO STA. 67+00

DATE: 00/03/2010

DRAWING NO.

C-07-1

C-07-1 09/23/10 PJE



PLAN

0 20 40 60
SCALE, FEET

NOTES:

FOUNDATION PREPARATION

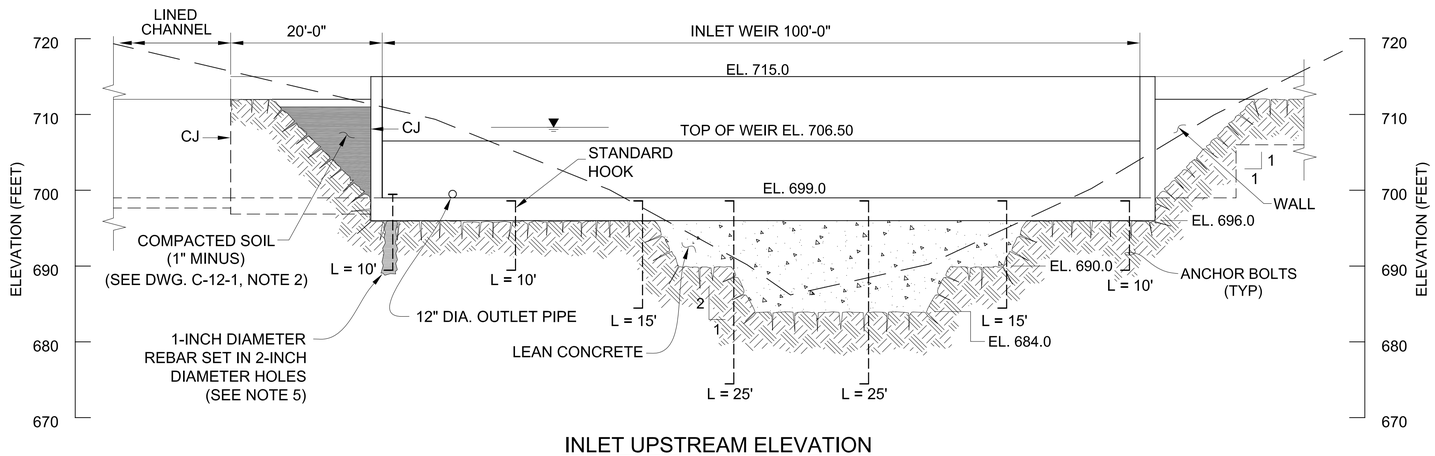
1. CONCRETE SHALL BE PLACED ON PREPARED EXCAVATION SURFACES.
2. SURFACES TO RECEIVE CONCRETE PLACEMENT SHALL BE PREPARED BY REMOVING ALL TOP SOIL AND WEATHERED ROCK.
3. WITHIN THE PREPARED FOUNDATION AREA ALL OPEN ROCK JOINTS SHALL BE TREATED BY FILLING WITH CONCRETE DOWN TO TWICE THE WIDTH OF THE OPENING.

CONCRETE WORKS

4. DIVERSION STRUCTURE SHALL BE FOUNDED ON PREPARED ROCK SURFACES OR ON LEAN CONCRETE PLACED TO FORM A LEVELED AND SOUND FOUNDATION.

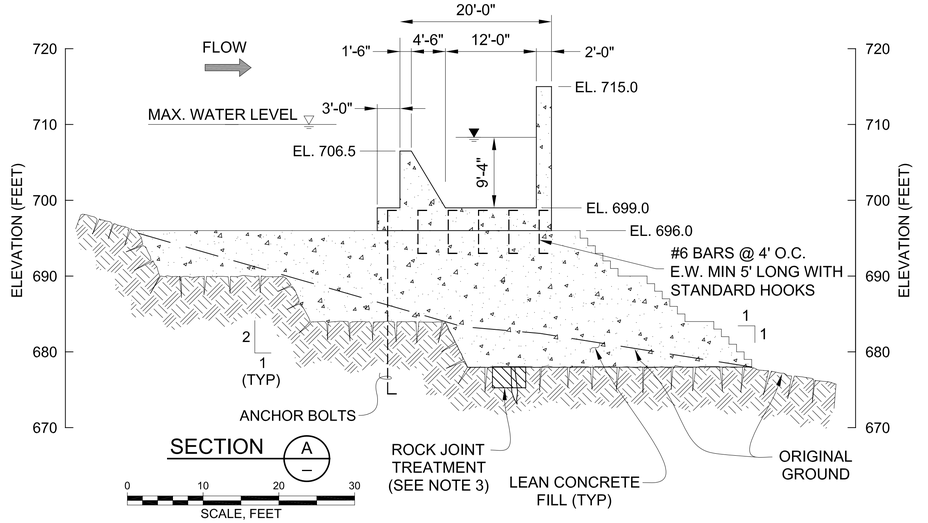
GROUTING

5. HOLES SHALL BE GROUTED WITH A NON-SHRINK SECA GROUT 212 OR EQUIVALENT PRODUCT.



INLET UPSTREAM ELEVATION

0 10 20 30
SCALE, FEET



SECTION A

0 10 20 30
SCALE, FEET

WASTE MANAGEMENT

Oakland • California GEI Consultants

WILLIAM A. RETTBERG LICENSED PROFESSIONAL ENGINEER No. 12473-C HAWAII, U.S.A.
DATE: 10-01-10

REV.	DESCRIPTION	BY	APP.	DATE
0	ADDENDA DRAWINGS			10-01-10

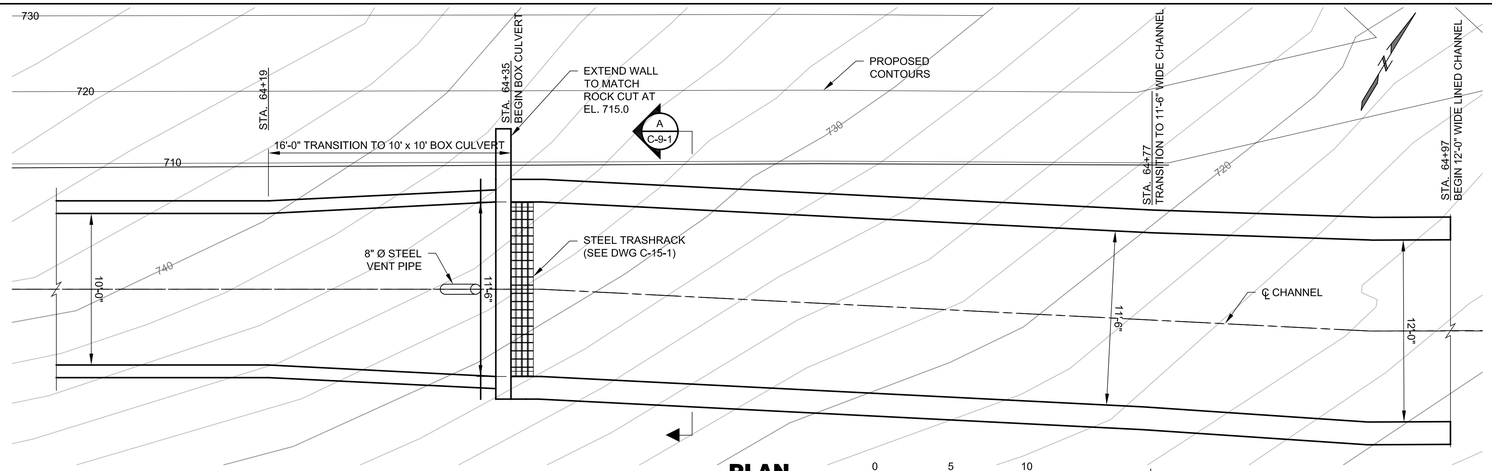
DESIGNED BY:	A. TLABAR
CHECKED BY:	C. ANDERSON
DRAWN BY:	P. EGGERS
CAD FILE NAME:	C-08.dwg
PROJECT NO. 07018-1	SCALE: AS SHOWN

WAIMANALO GULCH LANDFILL
WESTERN SURFACE WATER DRAINAGE PROJECT
EWA BEACH, OAHU, HAWAII

DIVERSION STRUCTURE PLAN AND SECTIONS

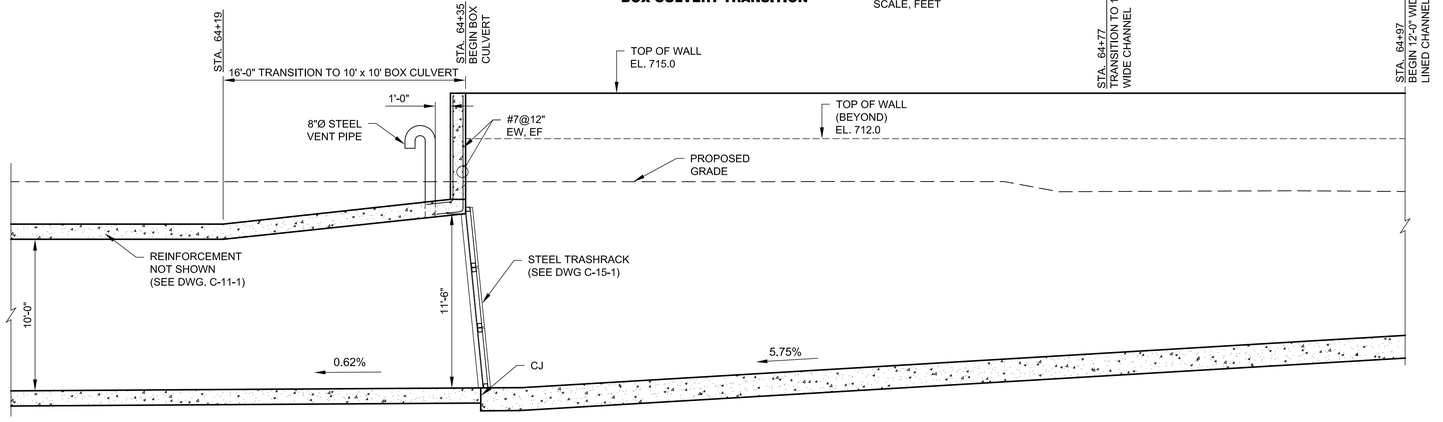
DATE: 10/01/2010
DRAWING NO.
C-08-1

C-08-1 09/23/10 SJM



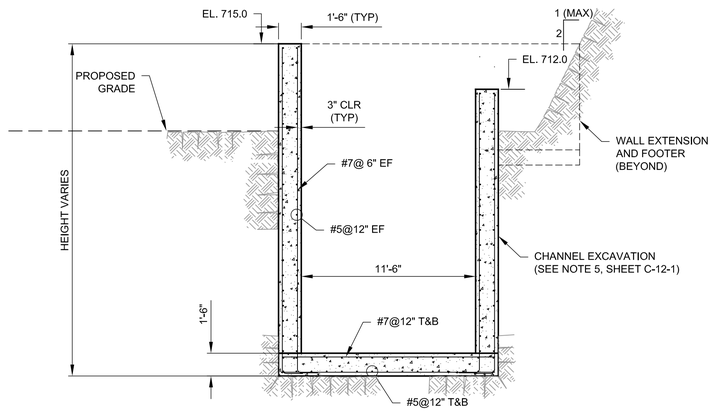
PLAN
BOX CULVERT TRANSITION

0 5 10
SCALE, FEET



PROFILE

0 5 10
SCALE, FEET

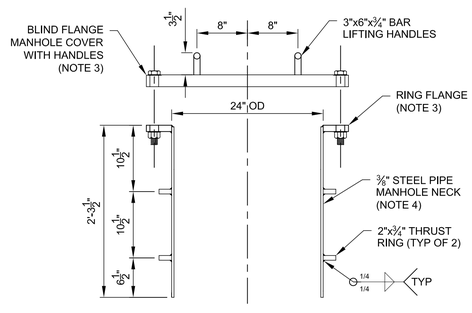


SECTION A C-9-1

0 5 10
SCALE, FEET

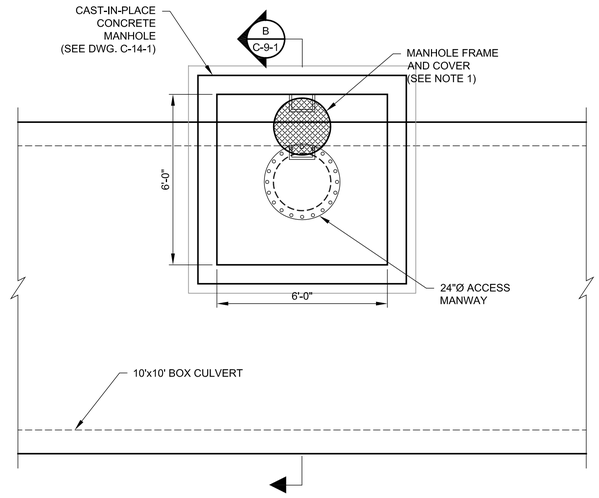
NOTES:

1. MANHOLE FRAME AND LID SHALL BE A NEENAH FOUNDRY R-5900G SERIES PRODUCT OR EQUIVALENT.
2. INSPECTION MANHOLES ALONG THE BOX CULVERT NOT RATED FOR TRAFFIC LOADING.
3. MANWAY COVER TO BE FABRICATED WITH STEEL FLANGES CONFORMING TO ANSI B16.5, CLASS 150.
4. MANHOLE NECK AND THRUST RINGS SHALL CONFORM TO ASTM A 139, GRADE C, D, OR E.
5. COAT AND LINE MANHOLE NECK WITH EPOXY CONFORMING TO AWWA C210 WITH MINIMUM DRY FILM THICKNESS OF 16 MILS.



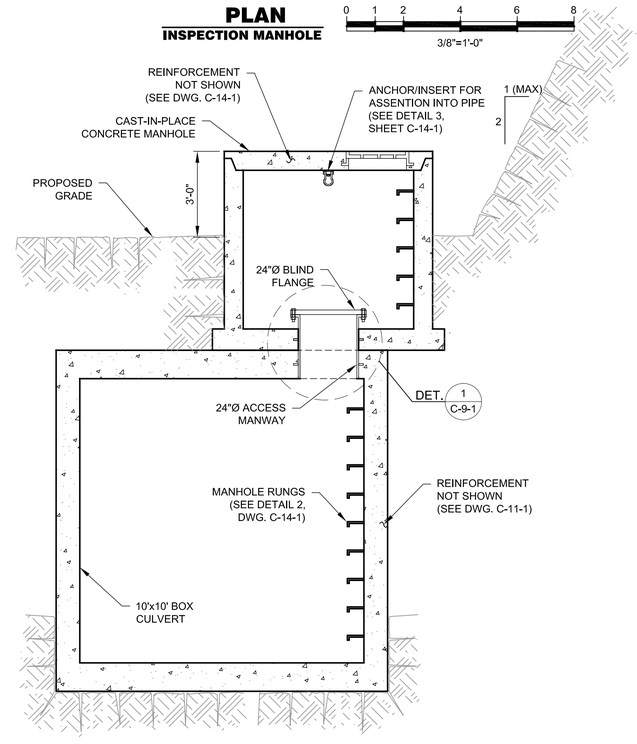
DETAIL 1 C-9-1

0 1 2
1" = 1'-0"



PLAN
INSPECTION MANHOLE

0 1 2 4 6 8
3/8"=1'-0"



SECTION B C-9-1

0 1 2 4 6 8
3/8"=1'-0"

WASTE MANAGEMENT

Oakland
California
GEI Consultants

WILLIAM A. RETTBERG
LICENSED PROFESSIONAL ENGINEER
No. 12473-C
HAWAII, U.S.A.
DATE: 10-01-10

REV.	DESCRIPTION	BY	APP.	DATE
0	ADDENDA DRAWINGS			10-01-10

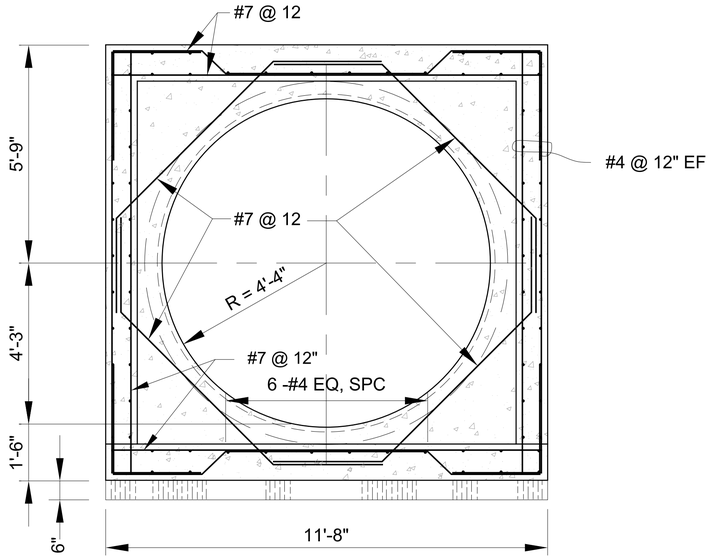
DESIGNED BY:	P. EGGERS
CHECKED BY:	C. ANDERSON
DRAWN BY:	P. EGGERS
CAD FILE NAME:	C-09-1.dwg
PROJECT NO. 07018-1	SCALE: AS SHOWN

WAIMANALO GULCH LANDFILL
WESTERN SURFACE WATER DRAINAGE PROJECT
EWA BEACH, OAHU, HAWAII

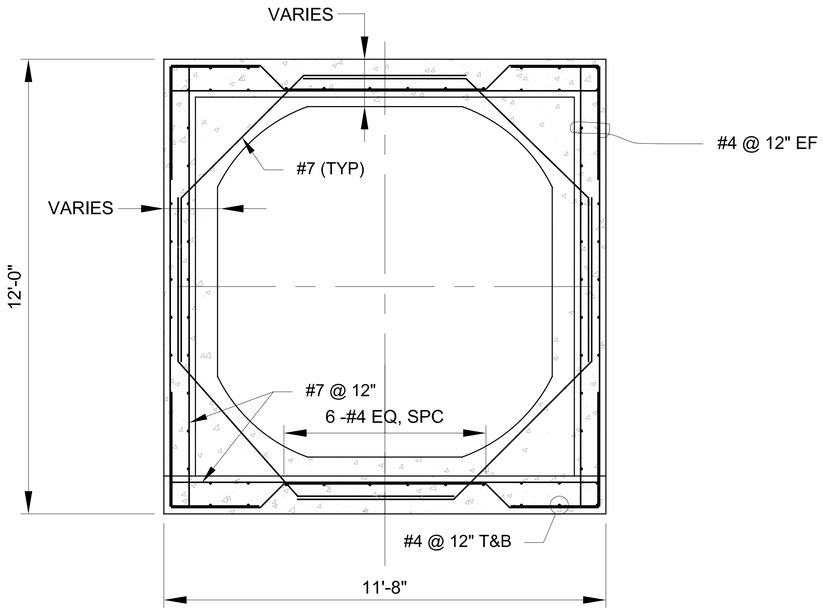
TRANSITION AND INSPECTION MANHOLE
PLAN AND SECTIONS

DATE: 10/01/2010
DRAWING NO.
C-09-1

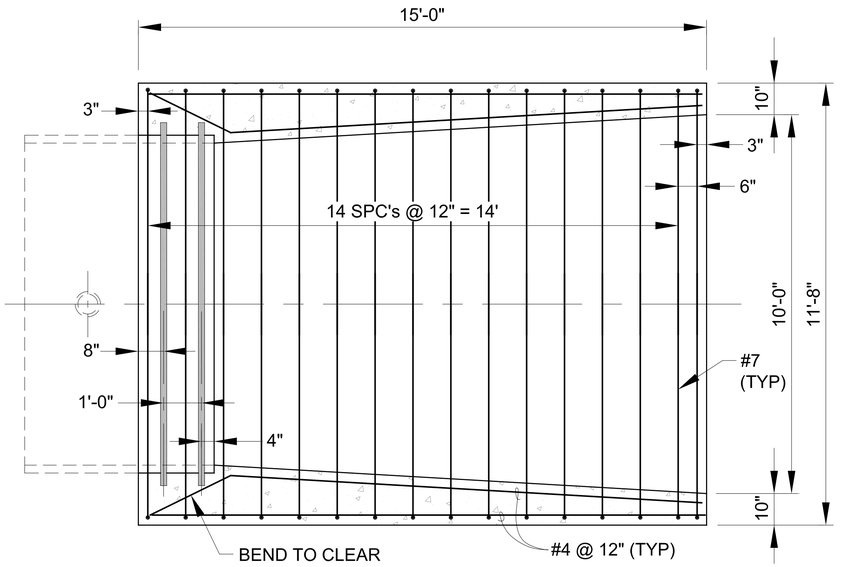
C-09 12/24/09 PYM



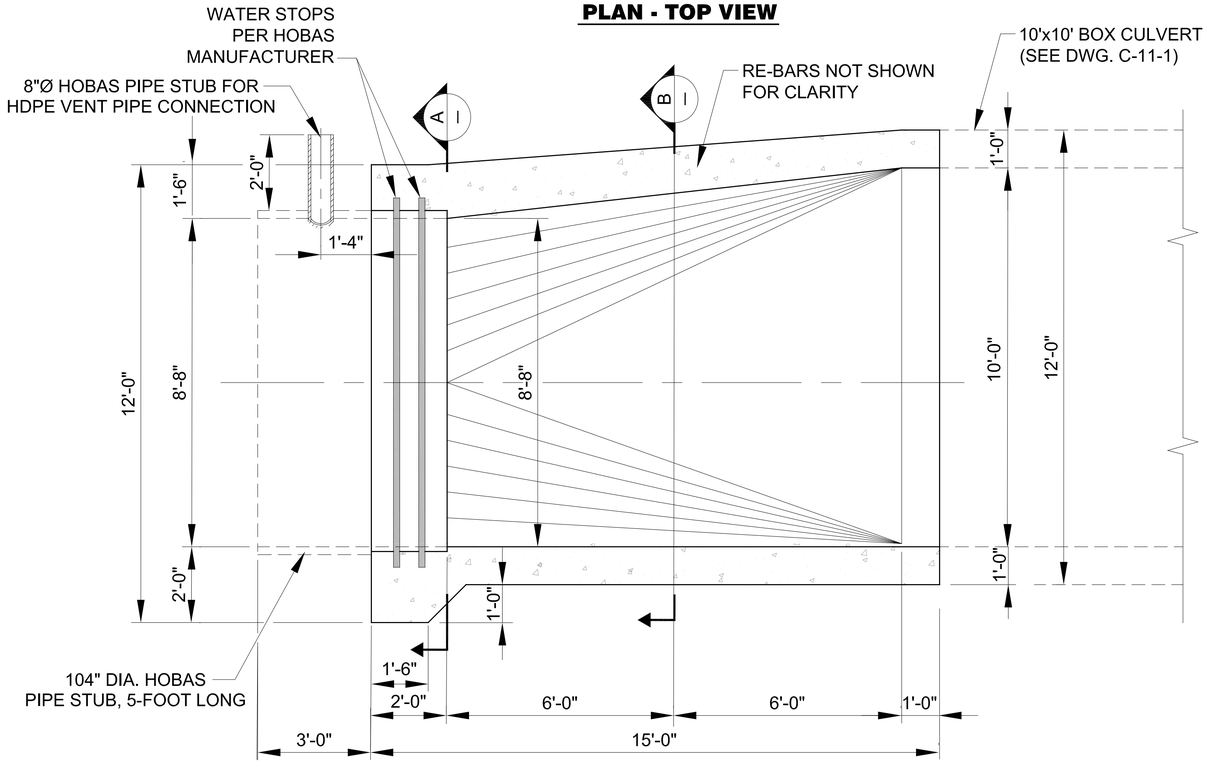
SECTION A



SECTION B



PLAN - TOP VIEW



TRANSITION - LONGITUDINAL SECTION

NOTES:

1. FOR STRUCTURAL NOTES SEE C-14.
2. DESIGN STRENGTH OF CONCRETE IS 4000 PSI.
3. REINFORCEMENT STEEL SHALL COMPLY WITH THE REQUIREMENTS OF ASTM A615 GRADE 60 DEFORMED BARS.

0 1 2 4 8
SCALE IN FEET

WASTE MANAGEMENT

Oakland California GEI Consultants

WILLIAM A. RETTBERG LICENSED PROFESSIONAL ENGINEER No. 12473-C HAWAII, U.S.A.
DATE: 10-01-10

REV.	DESCRIPTION	BY	APP.	DATE
0	ADDENDA DRAWINGS			10-01-10

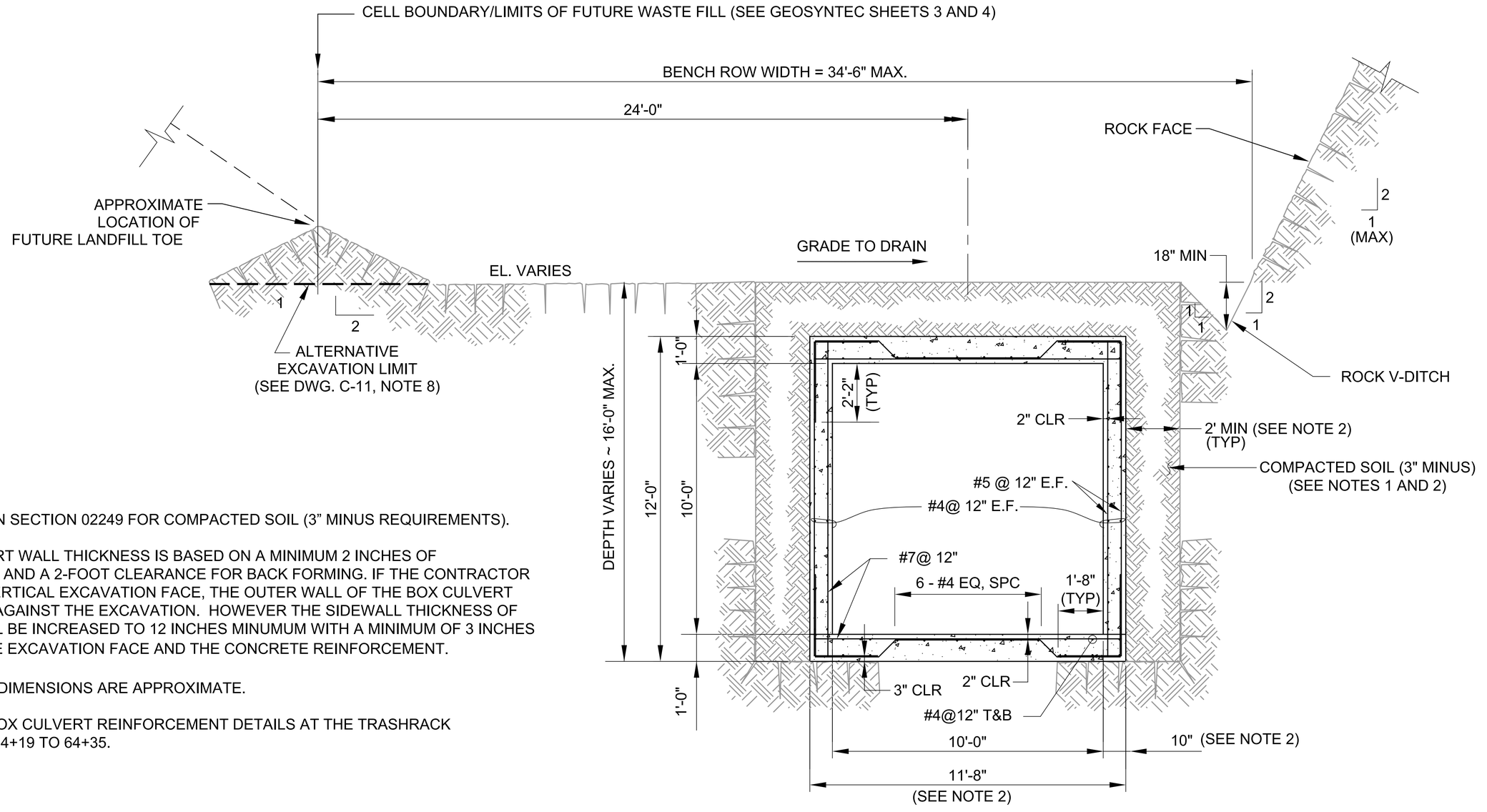
DESIGNED BY:	P. EGGERS
CHECKED BY:	C. ANDERSON
DRAWN BY:	P. EGGERS
CAD FILE NAME:	C-10.dwg
PROJECT NO. 07018-1	SCALE: AS SHOWN

WAIMANALO GULCH LANDFILL
WESTERN SURFACE WATER DRAINAGE PROJECT
EWA BEACH, OAHU, HAWAII

TRANSITION STRUCTURE PLAN & SECTIONS
STA 52+44

DATE: 10/01/2010
DRAWING NO.
C-10-1

C-10-1 09/23/10 SJM



NOTES:

1. REFER TO SPECIFICATION SECTION 02249 FOR COMPACTED SOIL (3" MINUS REQUIREMENTS).
2. THE 10-INCH BOX CULVERT WALL THICKNESS IS BASED ON A MINIMUM 2 INCHES OF REINFORCEMENT COVER AND A 2-FOOT CLEARANCE FOR BACK FORMING. IF THE CONTRACTOR CAN PREPARE A NEAT VERTICAL EXCAVATION FACE, THE OUTER WALL OF THE BOX CULVERT CAN BE CAST DIRECTLY AGAINST THE EXCAVATION. HOWEVER THE SIDEWALL THICKNESS OF THE BOX CULVERT SHALL BE INCREASED TO 12 INCHES MINUMUM WITH A MINIMUM OF 3 INCHES OF COVER BETWEEN THE EXCAVATION FACE AND THE CONCRETE REINFORCEMENT.
3. ROW AND BENCH WIDTH DIMENSIONS ARE APPROXIMATE.
4. SEE SHEET C-09-1 FOR BOX CULVERT REINFORCEMENT DETAILS AT THE TRASHRACK TRANSITION FROM STA. 64+19 TO 64+35.

0 4 8
SCALE, FEET

WASTE MANAGEMENT

Oakland California GEI Consultants

WILLIAM A. RETTBERG LICENSED PROFESSIONAL ENGINEER No. 12473-C HAWAII, U.S.A.
DATE: 09-23-10

REV.	DESCRIPTION	BY	APP.	DATE
0	ADDENDA DRAWINGS			09-23-10

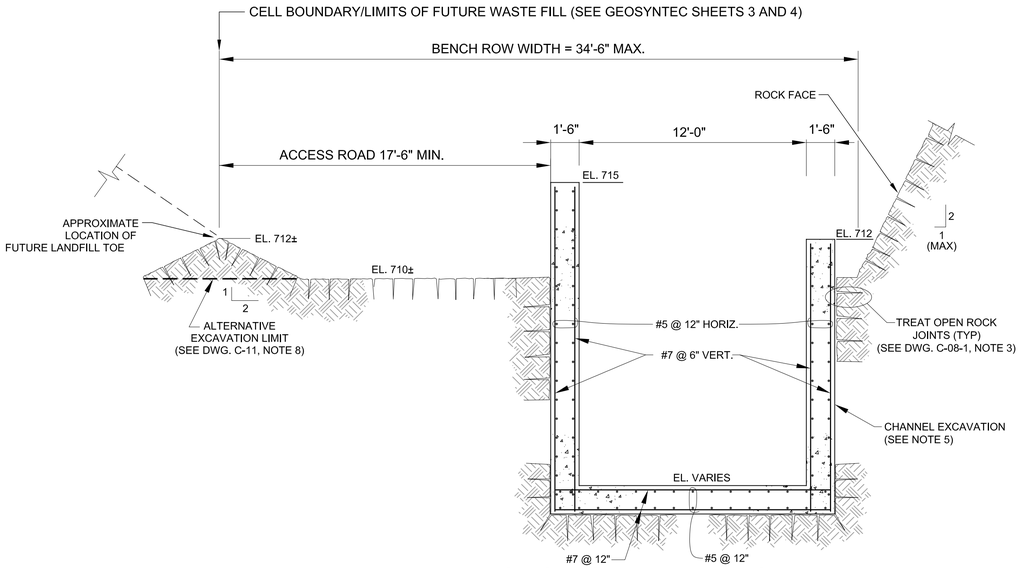
DESIGNED BY:	A. TLABAR
CHECKED BY:	C. ANDERSON
DRAWN BY:	P. EGGERS
CAD FILE NAME:	C-11-1
PROJECT NO.	07018-1
SCALE:	AS SHOWN

WAIMANALO GULCH LANDFILL
WESTERN SURFACE WATER DRAINAGE PROJECT
EWA BEACH, OAHU, HAWAII

SECTION - BOX CULVERT
STA 52+17 TO STA 64+05

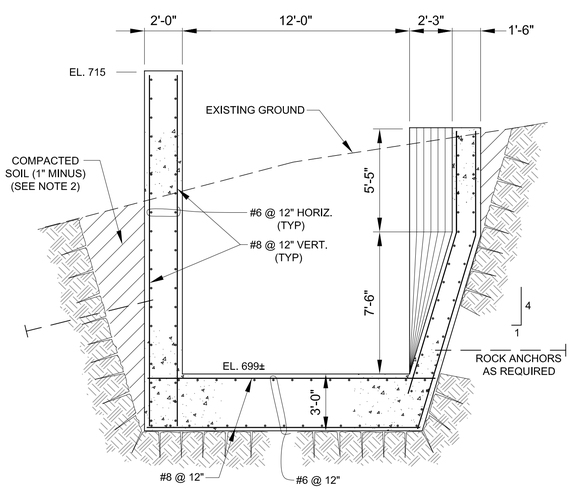
DATE: 09/23/2010
DRAWING NO.
C-11-1

C-11-1 09/23/10 SJM



SECTION - LINED CHANNEL

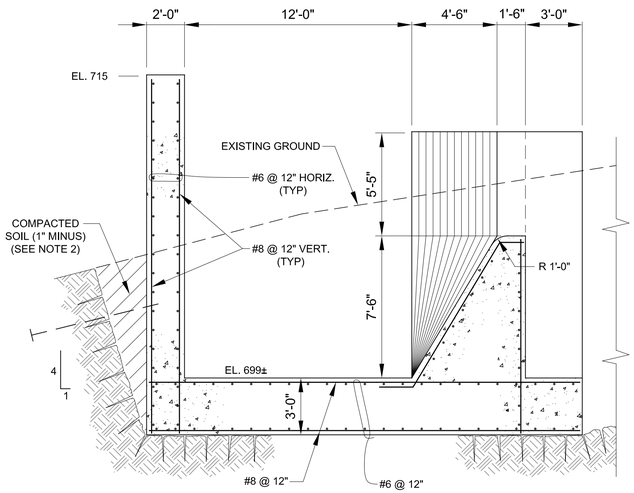
STA 64+35 TO STA 64+97



SECTION - DIVERSION STRUCTURE

MIDDLE OF TRANSITION

STA 65+07



SECTION - DIVERSION STRUCTURE

AT INTAKE POINT

STA 66+17

NOTES:

1. INSTALL MINIMUM 2-INCH INCH DIAMETER DRILL HOLES FOR ROCK ANCHORS USING CEMENTITIOUS GROUT. PROVIDE STABLE DRILL HOLE AND FLUSH WITH WATER TO REMOVE LOOSE MATERIAL.
2. REFER TO SPECIFICATION SECTION 02249 FOR COMPACTED SOIL (1" MINUS) REQUIREMENTS.
3. LIMIT MAXIMUM LENGTH OF ANCHOR SO THAT THE ANCHOR DOES NOT EXTEND BEYOND THE CELL BOUNDARY/LIMITS OF FUTURE WASTE FILL.
4. ROW AND BENCH WIDTH DIMENSIONS ARE APPROXIMATE.
5. IF CONTRACTOR CANNOT PREPARE A NEAT EXCAVATION FACE, AND BACKFORMING IS REQUIRED, A 2-FOOT MINIMUM CLEARANCE SHOULD BE PROVIDED, AND BACKFILLED WITH COMPACTED SOIL (3" MINUS) MATERIAL.

0 4 8
SCALE, FEET

WASTE MANAGEMENT

Oakland • California
GEI Consultants

WILLIAM A. RETTBERG
LICENSED PROFESSIONAL ENGINEER
No. 12473-C
HAWAII, U.S.A.
DATE: 10-01-10

REV.	DESCRIPTION	BY	APP.	DATE
0	ADDENDA DRAWINGS			10-01-10

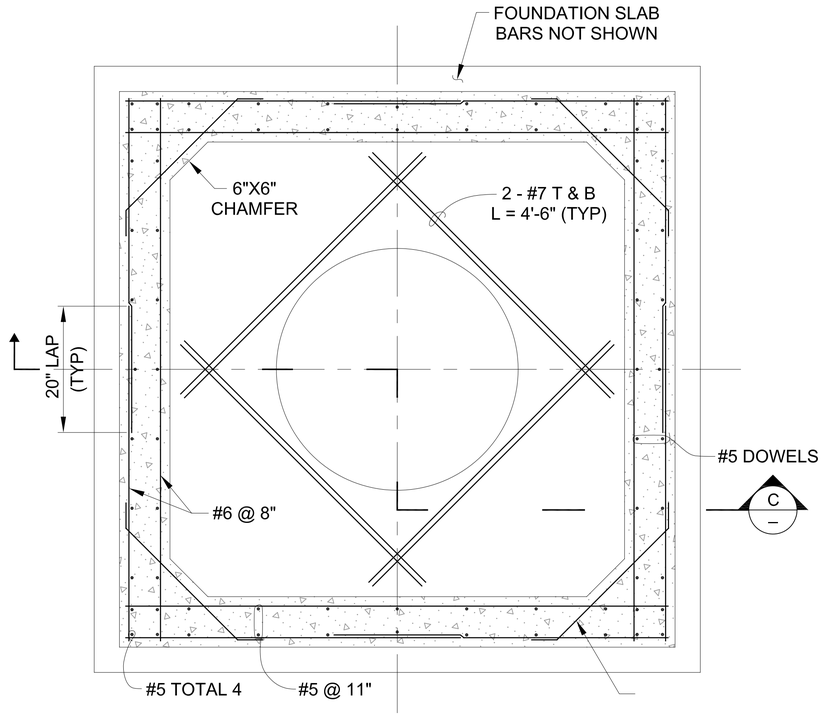
DESIGNED BY:	
CHECKED BY:	C. ANDERSON
DRAWN BY:	P. EGGERS
CAD FILE NAME:	C-12-1.dwg
PROJECT NO. 07018-1	SCALE: AS SHOWN

WAIMANALO GULCH LANDFILL
WESTERN SURFACE WATER DRAINAGE PROJECT
EWA BEACH, OAHU, HAWAII

TYPICAL SECTIONS
DIVERSION STRUCTURE AND
LINED CHANNEL TRANSITION

DATE: 10/01/2010
DRAWING NO.
C-12-1

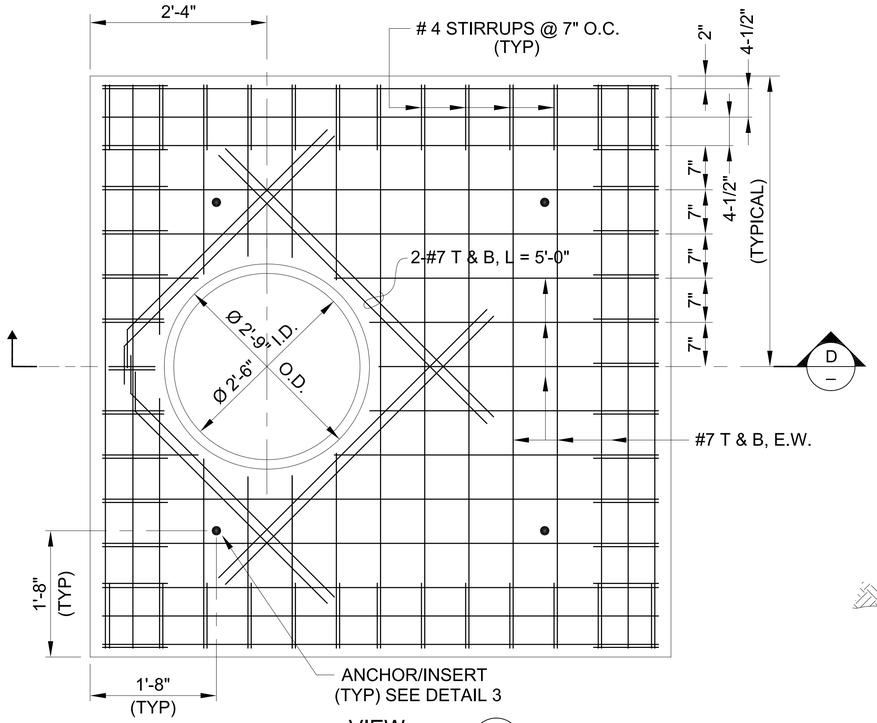
C-12-1 09/27/10 PJE



SECTION A

0 1' 2'

SCALE, FEET

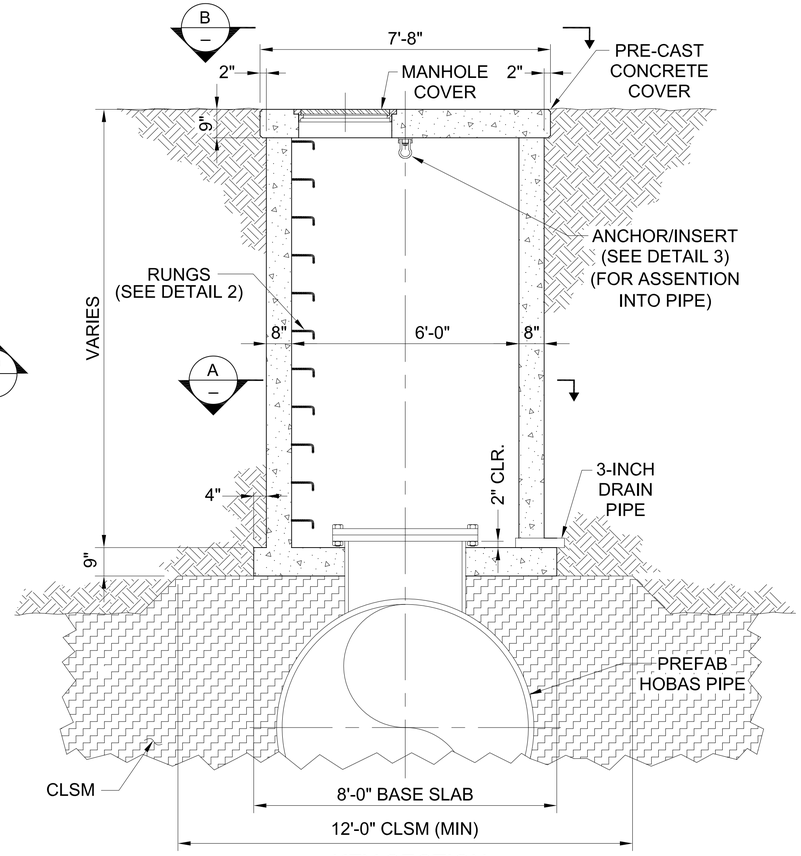


VIEW B

PRE-CAST TOP

0 1' 2'

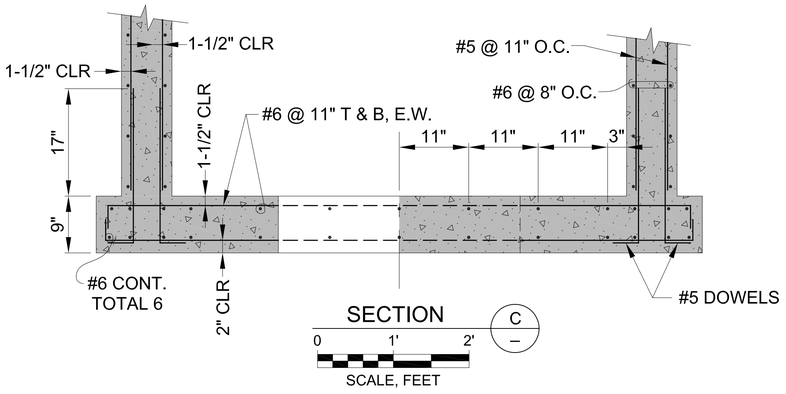
SCALE, FEET



KEY SECTION

0 2' 4'

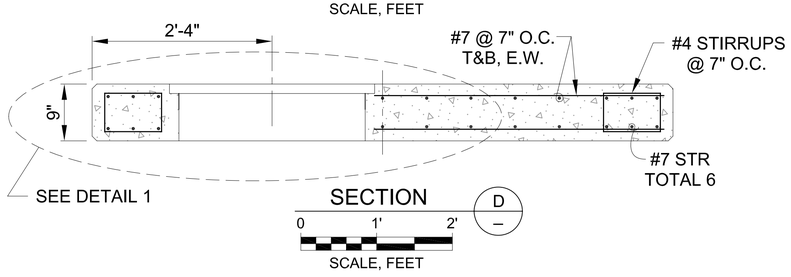
SCALE, FEET



SECTION C

0 1' 2'

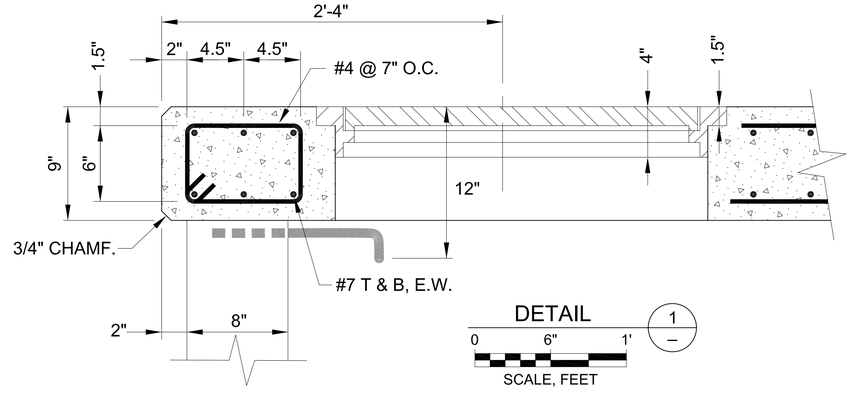
SCALE, FEET



SECTION D

0 1' 2'

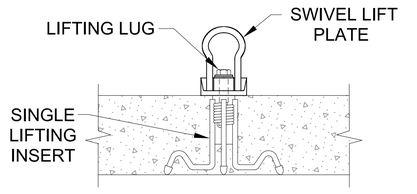
SCALE, FEET



DETAIL 1

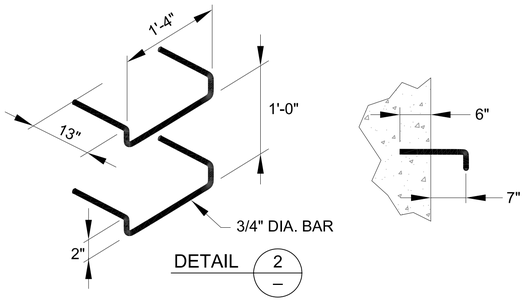
0 6" 1'

SCALE, FEET



DETAIL - ANCHOR/INSERT 3

NTS



DETAIL 2

WASTE MANAGEMENT

Oakland • California GEI Consultants

DRAFT

DATE: 09-00-10

REV.	DESCRIPTION	BY	APP.	DATE
0	0			09-00-10

DESIGNED BY:	A. TLABAR
CHECKED BY:	L. SANSOME
DRAWN BY:	P. MORRISON
CAD FILE NAME:	C-14-1.dwg
PROJECT NO. 07018-1	SCALE: AS SHOWN

WAIMANALO GULCH LANDFILL
WESTERN SURFACE WATER DRAINAGE PROJECT
EWA BEACH, OAHU, HAWAII

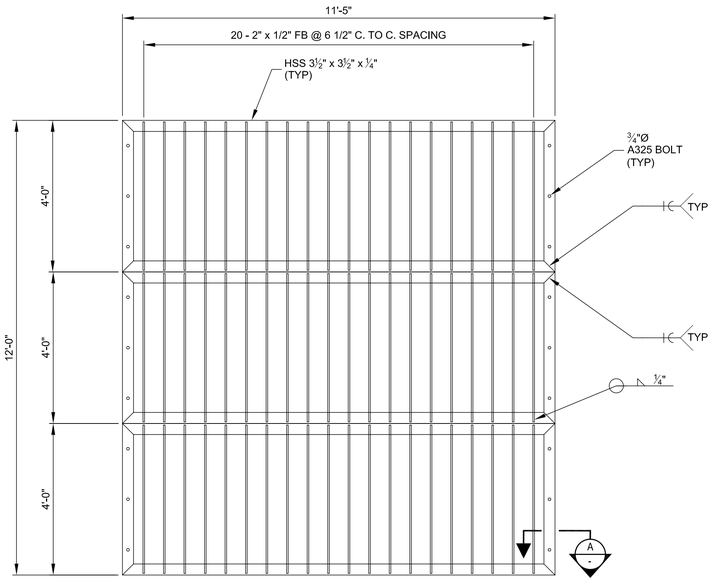
INSPECTION MANHOLE DETAILS

DATE: 09/23/10

DRAWING NO.

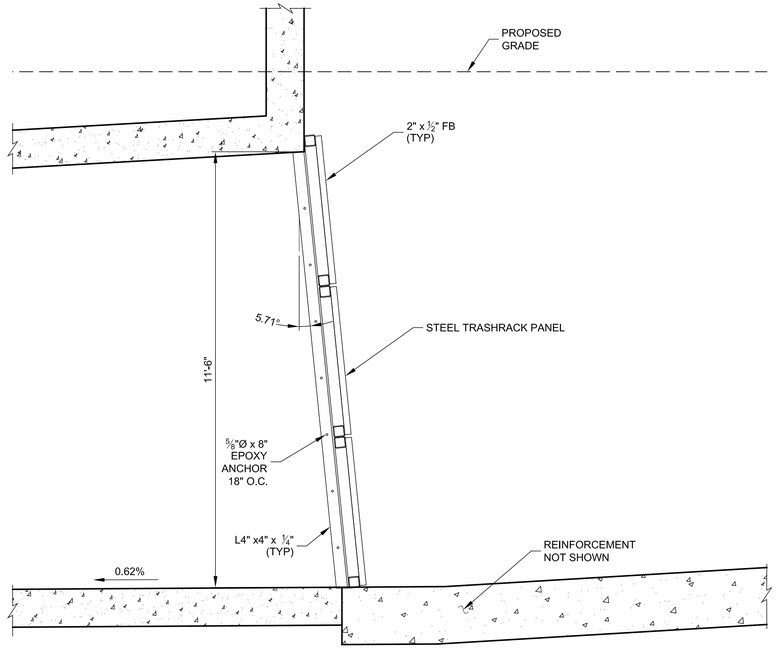
C-14-1

C-14-1 09/23/10 PYM



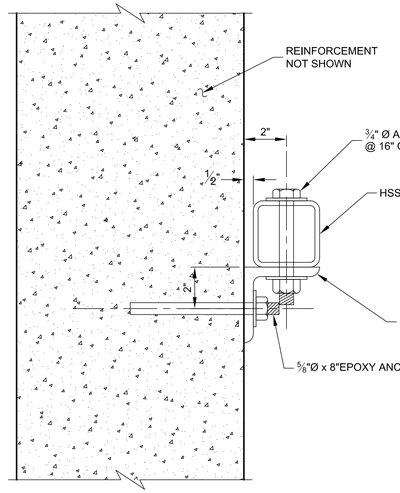
TRASH RACK PLAN

0 1 2 4
SCALE IN FEET



TRASH RACK SECTION

0 1 2 4
SCALE IN FEET



SECTION
WALL ATTACHMENT A

NOTES:

1. STANDARD ROLLED SECTIONS SHALL CONFORM TO ASTM A992. HOLLOW STRUCTURAL SECTIONS SHALL CONFORM TO ASTM A500, GRADE B. STEEL BARS SHALL CONFORM TO ASTM A36.
2. TRASHRACKS SHALL BE COATED AFTER FABRICATION WITH EPOXY CONFORMING TO AWWA C210 WITH MINIMUM THICKNESS OF 16 MILS.

WASTE MANAGEMENT

Oakland • California
GEI Consultants

WILLIAM A. RETTBERG
LICENSED PROFESSIONAL ENGINEER
No. 12473-C
HAWAII, U.S.A.
DATE: 10-01-10

REV.	DESCRIPTION	BY	APP.	DATE
0	ADDENDA DRAWINGS			10-01-10

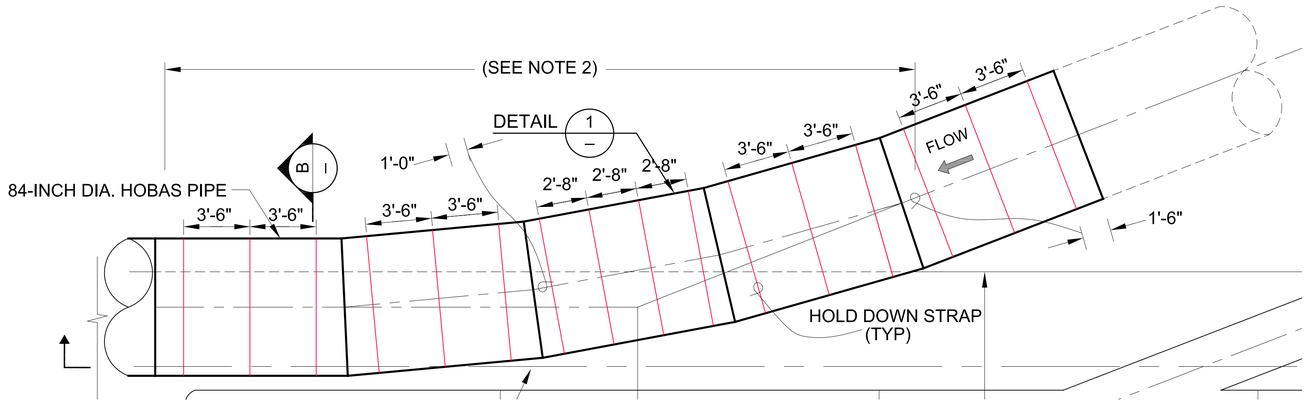
DESIGNED BY:	P. EGGERS
CHECKED BY:	C. ANDERSON
DRAWN BY:	P. EGGERS
CAD FILE NAME:	C-15.dwg
PROJECT NO. 07018-1	SCALE: AS SHOWN

WAIMANALO GULCH LANDFILL
WESTERN SURFACE WATER DRAINAGE PROJECT
EWA BEACH, OAHU, HAWAII

TRASHRACK PLAN, SECTIONS, AND DETAILS

DATE: 10/01/2010
DRAWING NO.
C-15-1

C-15-1 10/01/10 PJE



PLAN

NOTES:
SEE DWG C-20 FOR REFERENCED NOTES AND DETAILS

DATE: 06-11-10

0 4 8
SCALE, FEET

C-20-1 06/11/10 CA

WASTE MANAGEMENT

Oakland • California
GEI Consultants

FOR REVIEW

REV.	DESCRIPTION	BY	APP.	DATE
0	ISSUED FOR REVIEW			

DESIGNED BY:	A. TLABAR
CHECKED BY:	C. ANDERSON
DRAWN BY:	P. MORRISON
CAD FILE NAME:	C-20-1.dwg
PROJECT NO. 07018-1	SCALE: AS SHOWN

WAIMANALO GULCH LANDFILL
WESTERN SURFACE WATER DRAINAGE PROJECT
EWA BEACH, OAHU, HAWAII

HOLD DOWN STRAP LAYOUT

DRAWING NO.
C-20-1